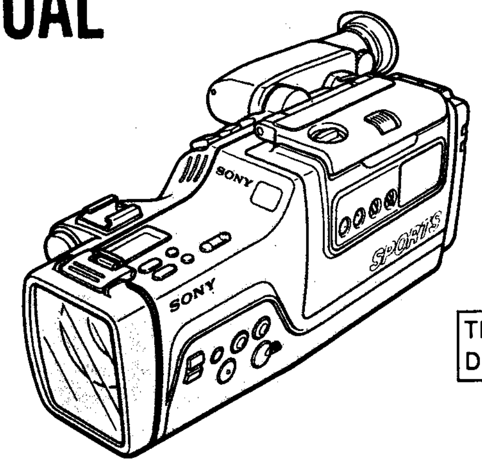
V13004

CCD-SP5/SP7

SERVICE MANUAL



US Model
Canadian Model
CCD-SP7
E Model
CCD-SP5

This is a waterproof type for daily life.
Do not use this in the water.

Video 8
USED O' MECANISM

CCD-SP5/SP7 is almost same specifications as that of CCD-F40/F340 except for cabinet and small board in the contents.
This Service manual discribes the difference between CCD-SP5/SP7 and CCD-F40.
For repair, please read this manual with CCD-F40/F340 service manual.

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	NTSC color, EIA standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 1.43 cm/sec. LP: Approx. 0.72 cm/sec. (playback only)
Recording time	SP mode: 2 hours (P6-120)
Playback time	SP mode: 2 hours LP mode: 4 hours (P6-120)
Fast forward time	Approx. 6 min. 30 sec. (P6-120)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 6 × power zoom lens f = 9 – 54 mm, F1.4 with macro Filter diameter: 46 mm
Auto focus system	Infrared autofocus
Color temperature	Auto: From the light at a tungsten lamp to the light on a slightly overcast day.
Minimum illumination	9 lux
Illumination range	9 lux – 100,000 lux (0.8 – 9,294 footcandles)
Recommended illumination	More than 300 lux (28 footcandles)
Aperture correction	Automatic

Input and output connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative
Audio output	Phono jack, −10dBs, at load Impedance 47 kilohms Impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5V DC
Video input	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative
Audio input	Phono jack, −10 dBs, input impedance more than 47 kilohms
Earphone jack	Minijack, 8-ohm impedance
Remote jack	Stereo mini-minijack
MIC jack	Minijack, −66 dBs, low impedance With 2.5 – 3 V DC output, impedance 6.8 kilohms
Microphone power output jack	Special minijack, 5 V DC

— continued on next page —

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

Display in the viewfinder

Mode and caution indicators
Mode: REC/STBY
  BACK LIGHT
  ZERO MEM
Caution: BATTERY
  DEW
  TAPE END
  CASSETTE
  CAUTION
Time/date indication
Title color indication
Shutter speed indication
Recording/battery lamp

General

Power requirements	Battery compartment 6 V/7.5 V
Power consumption	6.5 W (camera recording) including the viewfinder
Installation	Verfically
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to +140°F)
Dimensions	Approx. 136 × 137 × 331 mm (w/h/d) (5 3/8 ×5 1/2×13 1/8 in.)
Weight	Approx. 1.6 kg (3 lb 8 oz) excluding the battery and cassette
Microphone	Electret condenser microphone, omni-directional monaural type
Supplied accessories	Lithium battery CR2025 (1) Carrying case (1) Connecting cable (1)

Optional accessories

Battery pack NP-55, NP-77
AC power adaptor AC-V55
Car battery cord DCC-16AW
Connecting cable
  VMC-910MS/920MS (2 phono to 3 phono)
  VMC-710M/720M (2 phono to 2 phono)

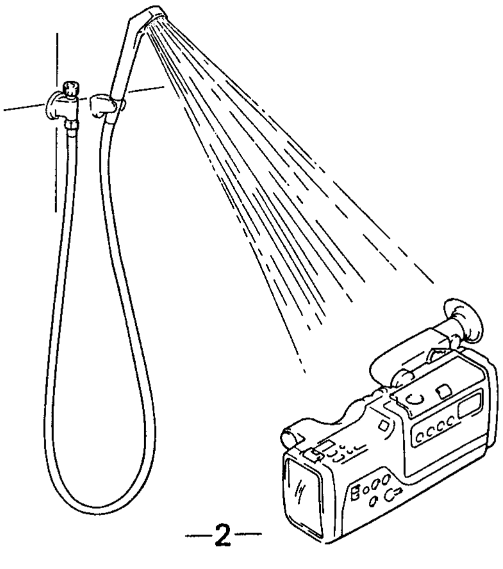
TYPICAL DIFFERENCE

Change of parts name due to the change of cabinet and small boards.

CCD-F40/F340		CCD-SP5/SP7
MC-24 board	→	MC-29 board MJ-19 board
PA-13 board	→	PA-14 board
SW-92 board	→	SW-93 board
ZM-8 board	→	ZM-9 board
FC-16 board	→	FC-19 board TI-13 board
FD-6 board	→	FD-9 board
FV-1 board	→	FV-3 board
EJ-4 board	→	EJ-6 board
VF-13 board	→	VF-20 board
TL-18 board	→	TL-21 board
TL-19 board	→	TL-24 board

How to check the drip-proof function after the completion of repair.

Install a shower at the tap and check if there is any leakage of water by sprinkling water over the main body evently.



SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

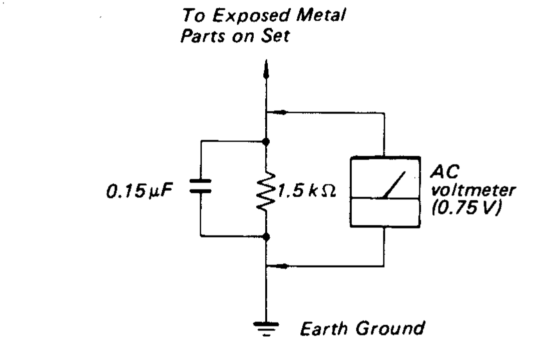


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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SUPPLEMENT-1

- **For mechanical adjustment;**
  refer to the separate volume, "8 mm Video MECHANICAL ADJUSTMENT MANUAL TYPE3 (O' MECHANISM)".

- For electrical adjustment ;
  refer to CCD-F40/F340 service manual.

SECTION 1
GENERAL

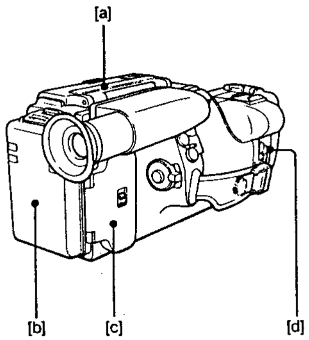
1-1. NOTES

- The splash-proof CCD-SP5/SP7 has some resistance to water and moisture and makes it possible to use the unit outdoors. Exposure to water and moisture is not recommended.
- For "once-only" events, it is strongly recommended to have a trial run to check that everything is working perfectly.
- Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws.
- PCM recording/playback is not possible with this unit. The PCM sound recorded or after-recorded with another recorder cannot be played back with this unit.
- For using the recorder abroad, see page 112.
- The following units are packed with the CCD-SP5/SP7 video camera recorder.
  Battery pack NP-55
  Battery pack holder NPA-SP7
  AC power adaptor AC-V30
  RFU adaptor RFU-89UCKA
  Shoulder strap
  Cassette tape
  For details on these units, please read their instruction manuals.

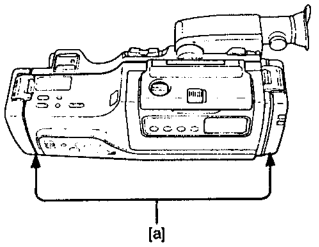
This unit uses 8 mm video format cassettes. It records in the SP mode (approximately 1.43 cm/second) and can play back in the SP mode and the LP mode (approximately 0.72 cm/second).
The quality of the playback picture in the LP mode, however, will not be as good as that in the SP mode.

1-2. NOTES ON USE ON THE SEA OR AT THE BEACH

A-1



A-2



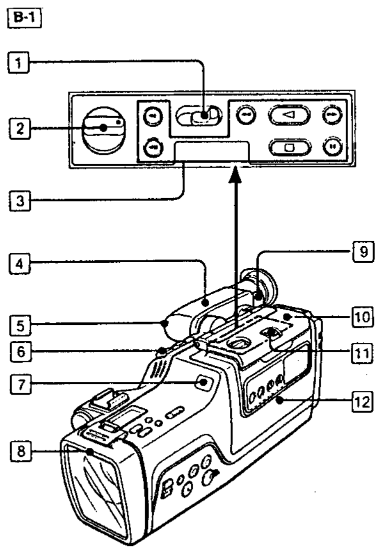
On Operation
- **Do not use the unit under water.**
- Avoid opening the top cover [a], the battery cover [b], the jack cover [c] or the lens cover [d] on the sea or at the beach. A-1
  Operations such as installing and changing a cassette tape or the battery should be done in a place with low numidity and no sea breeze.
- The splash-proof integrity of the unit is maintained by the battery cover, the lens cover, the top cover, the jack cover and the rubber gasket. Be especially careful not to damage or deform those areas.
- If you cannot avoid leaving the unit in the sun, be sure to cover it with a towel or similar.
- Do not throw the unit into the water.
- Do not change a battery with a wet hand.
- Before opening the buckle or the cover, clean the unit with a dry soft cloth.
- Before recording, clean the lens cover.

On the rubber gasket A-2
- The rubber gaskets [a] assure the splash-proof function of this unit. To maintain splash-proof integrity, handle them properly. Incorrect operation may cause water leakage.
- Check that threre are no scratches or cracks on the rubber gaskets. Scratches or cracks may cause water leakage.
- Remove foreign materials such as dust and sand completely from the rubber gaskets and the grooves and the surfaces of the body in contact with the rubber gasket.
- Useful life of the rubber gasket depends upon maintenance and the frequency of use, but we recommend changing them once a year at your Sony service facility.

On Cleaning
After recording at a location subject to sea breezes, clean the unit with a soft cloth lightly moistened with mild detergent solution. If water drops remain on the unit, the metal parts may rust. Do not wash the unit under running water or use any type of solvent, such as alcohol or benzine for cleaning, as this might damage the finish.

Sony does not accept liability for damage to the video camera recorder, battery, etc. or for cost of recording if water leakage occurs as a result of incorrect operation.

1-3. LOCATION AND FUNCTION OF PARTS AND CONTROLS



For details on the use of each control, refer to the pages indicated in the circle.

B-1

1 ● **REC (recording) switch**
Slide in the direction of the arrow.

2 **POWER switch**
CAMERA: For camera recording
VTR: For playing back or editing tapes
OFF: Power off

3 **Tape transport buttons**
◄ (playback)
◄◄ FF (fast forward)
►► REW (rewind)
■ (stop)
❚❚ (pause)
◄❚❚ (frame-by-frame)
◄❚ (slow)

4 **Viewfinder**
The picture being recorded or played back can be monitored in monochrome here. Also, data such as caution indicators and function mode are displayed on the viewfinder screen.

5 **Camera recording/battery lamp**
Lights during camera recording. It blinks when the battery is exhausted.

6 **Power zoom button**

7 **White balance sensor**
This is the sensor for auto white balance adjustment.
During recording, do not cover the sensor.

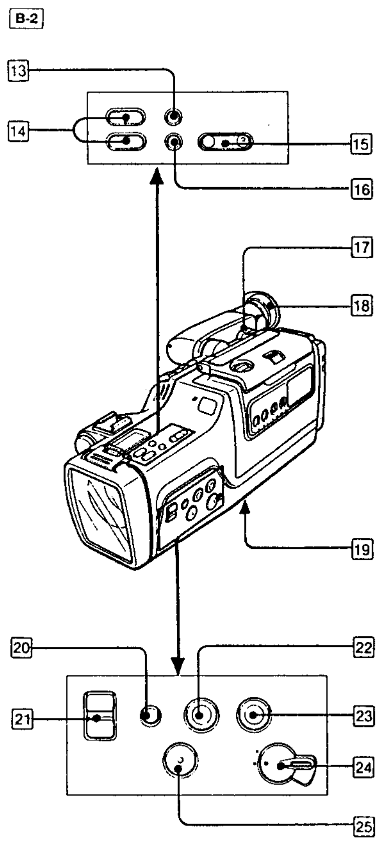
8 **Lens cover**

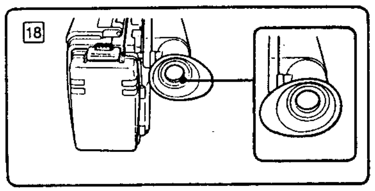
9 **Viewfinder lens adjustment ring**
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.

10 **EJECT (cassette eject) button**
Located inside the top panel cover.

11 **Top cover open button**

12 **Cassette holder**





B-2

13 **ZERO MEM (zero memory) button**
Used to memorize the counter zero point.

14 **DATE and TIME SET buttons**
Press to display or turn off the date or time.

15 **EDITSEARCH buttons**

16 **RESET button**
Press to reset the counter to zero.

17 **Viewfinder lock lever**
While pressing this lever, turn up the viewfinder.

18 **Eyecup**
The eyecup is attached for the right eye. For the left eye, detach the rubber eyecup and attach it as illustrated.

19 **Tripod receptacle**

20 **MACRO set button**

21 **Focus adjustment button**

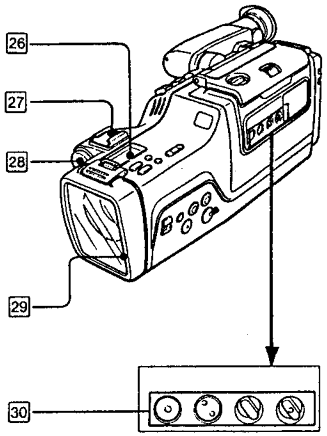
22 **FOCUS button**
Used for manual focusing.

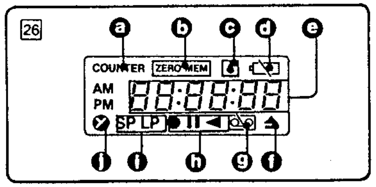
23 **SHUTTER SPEED button**
Used to select the shutter speed.

24 **AUTO LOCK switch**
Normally set to the AUTO LOCK position for auto focusing, automatic iris adjustment and normal shutter speed. To adjust these items manually, set this switch to the upper position.

25 **BACK LIGHT button**

B-3





B-3

26 **Display window**
ⓐ COUNTER indicator
ⓑ ZERO MEM (memory) indicator
ⓒ Moisture condensation inside the unit.
ⓓ Blinks when the battery is weak.
ⓔ Indicates the time or the tape count.
ⓕ Blinks when moisture has condensed on the tape, when the tape approaches its end during camera recording.
ⓖ Lights steadily when no cassette is inserted. Blinks when the tape approaches its end.
ⓗ Tape operation mode indicators
ⓘ Tape speed indicator
ⓙ Lights when the slit in the head is clogged.

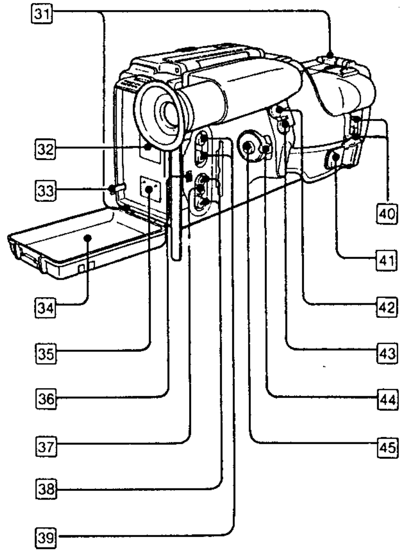
27 **Accessory shoe**
Attach an optional external microphone, video light, etc.

28 **Built-in microphone (monaural)**

29 **Infrared beam emitter and detector**
Transmits an infrared beam toward the object to be shot and receives the beam reflected from the object during auto focusing. Do not look into it for a long time when recording with auto focusing. Do not cover here.

30 **SUPERIMPOSE buttons**
Used to record the title.
TITLE 1 button
TITLE 2 button
MEMORY button
COLOR button

B-4



B-4

31 **Hooks for shoulder strap**
Attach a shoulder strap.
Be careful that the shoulder strap does not cover the white balance sensor, built-in microphone or lens.

32 **Lithium battery compartment**

33 **BATT (battery eject) knob**

34 **Battery cover**

35 **Battery mounting surface**

36 **EDIT switch**
Normally set it to the upper position. When editing tapes, set to EDIT.

37 **RFU DC OUT (RFU adaptor DC output) jack (special minijack)**
Supplies power to the RFU-89UCKA RFU adaptor.

38 **VIDEO/AUDIO OUT (output) jacks (phono jacks)**

39 **VIDEO/AUDIO IN (input) jacks (phono jacks)**

40 **MIC jack and DC OUT (microphone power output) jack**
Connect an external microphone.
The MIC jack accepts Sony "plug-in-power" microphones and supplies power to them.

41 **Grip strap**

42 **🎧 (earphone) jack (minijack)**

43 **REMOTE connector (stereo mini-minijack)**

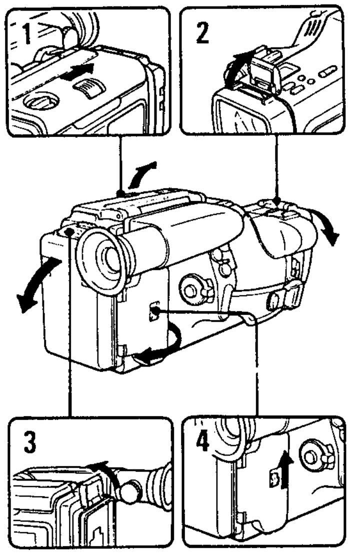
Note
The 🎧 (earphone) jack and REMOTE connector are not splash-proof.

44 **STANDBY switch**
Set to STANDBY to set the unit to recording pause mode.

45 **START/STOP button**
Press to start and stop camera recording.

1-4. TO OPEN EACH SPLASH-PROOF COVER

C



1 **Top cover**
- To insert or eject the cassette.

Slide the OPEN button on the top cover in the direction of the arrow.

2 **Lens cover**
- To clean the lens.
- To attach the filter or conversion lens.

Release the buckle.

3 **Battery cover**
- To install or remove the battery pack.
- To use the AC power adaptor or battery pack holder

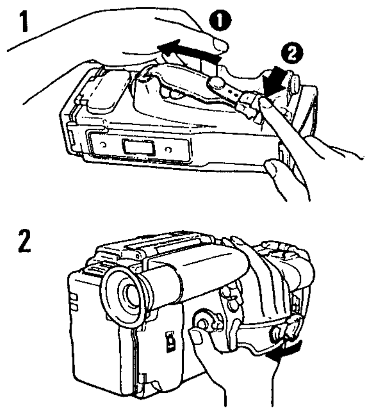
Release the buckle and turn the cover 180 degrees down. The battery cover is removed. To attach the battery cover, hook the bottom of the battery cover on the catches of the video camera recorder.

4 **Jack cover**
- To connect the equipment to be used with this unit.

Slide the LOCK/RELEASE button to the RELEASE position arrow.

1-5. ADJUSTING THE GRIP STRAP

D



Adjust the length so that your thumb can easily manipulate the START/STOP button. D

1 Loosen the grip strap.
❶ Pulling the strap,
❷ push to unfasten the stopper.
2 Pull to adjust the length of the strap.

1-6. CHECK LIST BEFORE RECORDING

To make sure you don't miss those "once in a lifetime" scenes, go over the following check list and make the necessary preparations.

Required for recording

CCD-SP5/SP7	
Battery pack NP-55 or NP-77	Is it charged? Are there enough battery packs to cover the planned recording time?
Cassette tapes	Have you prepared enough tapes to cover the planned recording time?

Convenient accessories

Carrying case	
Shoulder strap	
Tripod	Required for scenes in which stability of the camera is important. Tripod mount screw must match the receptacle mount.
AC power adaptor	Used to operate the video camera recorder on house current and to charge battery packs
RFU adaptor RFU-89UCKA	Adaptor for connection to a TV or VTR which is not equipped with video/audio inputs.
Video light HVL-50DU	Required for recording in low light situations.
Earphone (miniplug)	Permits monitoring of audio signal during recording.

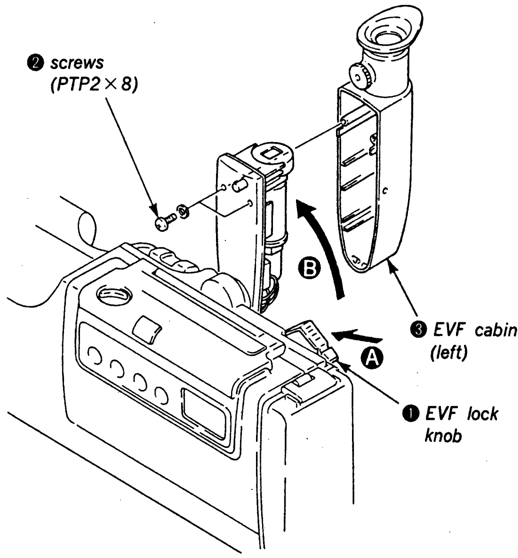
SECTION 2
DISASSEMBLY

Refer to CCD-F40/F340 service manual for the following items.

- **REMOVING THE LS LID**
- **OPENING THE VA-40 BOARD**
- **OPENING THE SS-86 BOARD**
- **REMOVING THE CASSETTE ARM**
- **REMOVING LS CASSETTE COMPARTMENT ASSEMBLY**

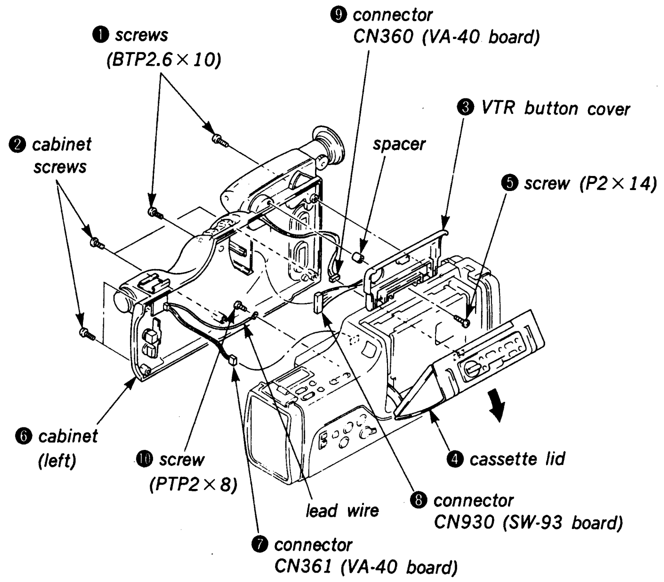
2-1. REMOVING THE VIEWFINDER

1) Raise set up the Viewfinder assy from the unit in the direction of arrow Ⓑ.
   While sliding the EVF lock knob ❶ in the direction of arrow Ⓐ.
2) Remove two screws ❷.
3) Remove the EVF cabinet (left) ❸.


❷ screws
(PTP2 × 8)
Ⓑ
Ⓐ
❸ EVF cabinet
(left)
❶ EVF lock
knob

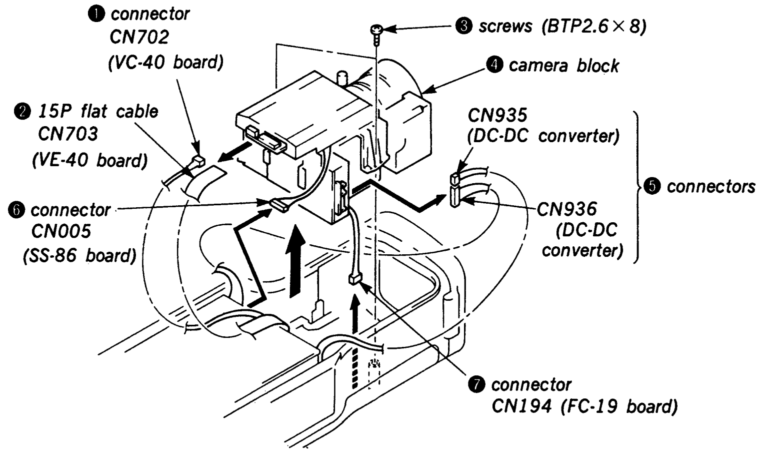
2-2. REMOVING THE CABINET (LEFT)

1) Remove two screws ❶.
2) Remove four screws ❷.
3) Remove the VTR button cover ❸.
4) Opening the Cassette lid ❹ in the didection of arrow.
5) Remove screw ❺.
6) Remove the Cabinet (left) ❻.
7) Remove three Connector ❼ (CN361), ❽ (CN930), ❾ (CN360).
8) Remove Screw ❿.


❶ screws
(BTP2.6 × 10)
❾ connector
CN360 (VA-40 board)
❸ VTR button cover
❷ cabinet
screws
spacer
❺ screw (P2 × 14)
❻ cabinet
(left)
❿ screw
(PTP2 × 8)
lead wire
❹ cassette lid
❽ connector
CN930 (SW-93 board)
❼ connector
CN361 (VA-40 board)

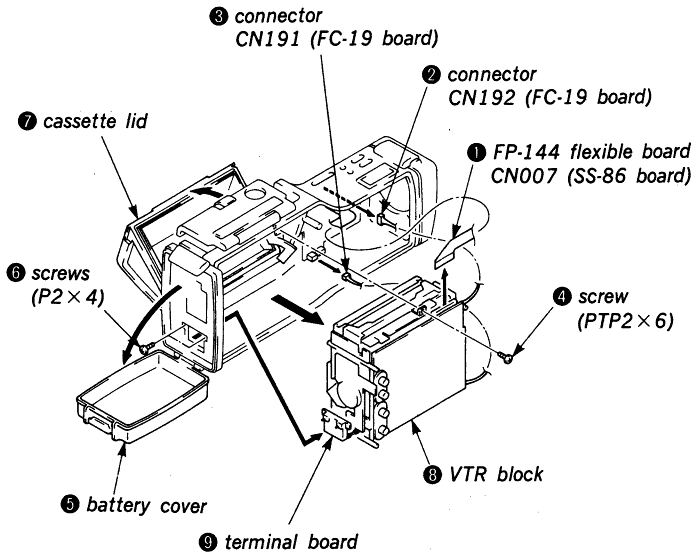
2-3. REMOVING THE CAMERA BLOCK

1) Remove two screws ❶.
2) Remove the 15P flat cable ❷ (CN703).
3) Remove screw ❸.
4) Remove the camera block ❹, In the direction of arrow.
5) Remove two connector ❺ (CN935, 936).
6) Remove two connectors ❻ (CN005), ❼ (CN194)


❶ connector
CN702
(VC-40 board)
❸ screws (BTP2.6 × 8)
❹ camera block
❷ 15P flat cable
CN703
(VE-40 board)
CN935
(DC-DC converter)
❺ connectors
❻ connector
CN005
(SS-86 board)
CN936
(DC-DC
converter)
❼ connector
CN194 (FC-19 board)

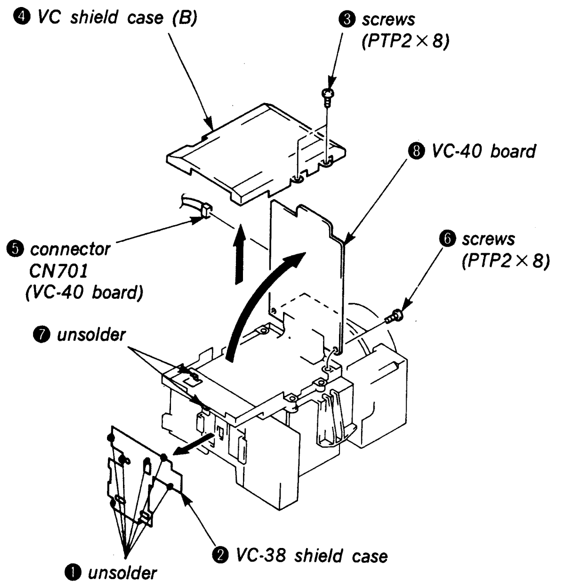
2-4. REMOVING THE VTR BLOCK

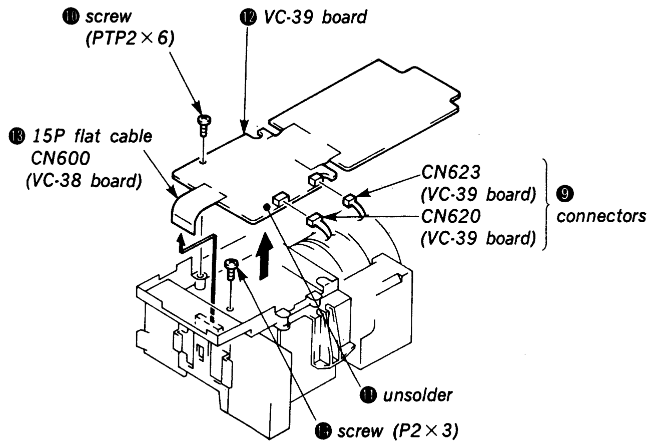
1) Remove the FP-144 flexible board ❶ (CN007).
2) Remove two connectors ❷ (CN192), ❸ (CN191).
3) Remove screw ❹.
4) Opening the battery cover ❺.
5) Remove two serews ❻.
6) Opening the cassette lid ❼, in the direction of arrow.
7) Remove the VTR block ❽.
8) Remove the Terminal board ❾.

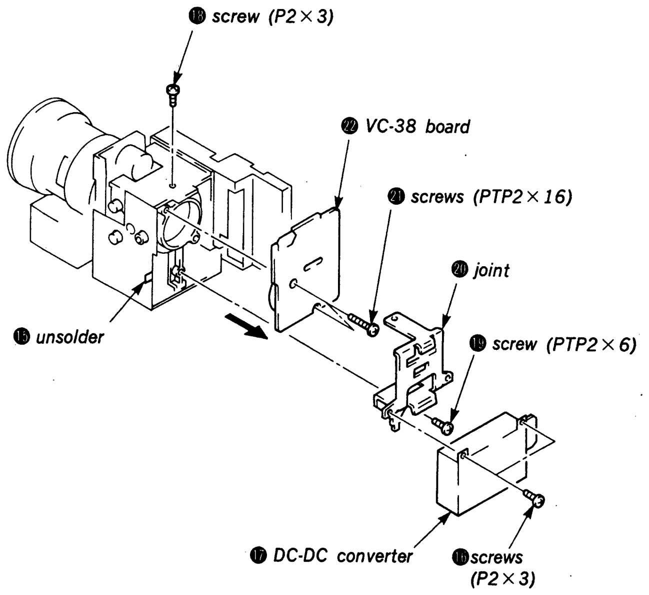

❸ connector
CN191 (FC-19 board)
❷ connector
CN192 (FC-19 board)
❼ cassette lid
❶ FP-144 flexible board
CN007 (SS-86 board)
❻ screws
(P2 × 4)
❹ screw
(PTP2 × 6)
❽ VTR block
❺ battery cover
❾ terminal board

2-5. REMOVING THE VC-38 (CCD IMAGER), VC-39 AND VC-40 BOARDS

1) Unsolder (at six point ❶) the VC-38 shield cace ❷.
2) Remove two screws ❸.
3) Remove the VC shield cace (B) ❹.
4) Remove the connector ❺ (CN701).
5) Remove two screws ❻.
6) Unsolder at two point ❼.
7) Remove the VC-40 board ❽.
8) Remove two connectors ❾ (CN620, CN623).
9) Remove screw ❿.
10) Unsolder at one point ⓫.
11) Remove the VC-39 board ⓬ in the direction of arrow.
12) Remove the 15P flat cable ⓭ (CN600).
13) Remove the screw ⓮.
14) Unsolder one point ⓯.
15) Remove two screws ⓰.
16) Remove the DC-DC converter ⓱.
17) Remove two screw ⓲, ⓳.
18) Remove the joint bracket ⓴.
19) Remove two screws ㉑.
20) Remove the VC-38 board ㉒.


❹ VC shield case (B)
❸ screws
(PTP2 × 8)
❽ VC-40 board
❺ connector
CN701
(VC-40 board)
❻ screws
(PTP2 × 8)
❼ unsolder
❶ unsolder
❷ VC-38 shield case


❿ screw
(PTP2 × 6)
⓬ VC-39 board
⓭ 15P flat cable
CN600
(VC-38 board)
CN623
(VC-39 board)
CN620
(VC-39 board)
❾ connectors
⓫ unsolder
⓮ screw (P2 × 3)


⓲ screw (P2 × 3)
㉒ VC-38 board
㉑ screws (PTP2 × 16)
⓴ joint
⓯ unsolder
⓳ screw (PTP2 × 6)
⓱ DC-DC converter
⓰ screws
(P2 × 3)

3-1. C

ɔf arrow.

N930), ❾

on cover

w (P2×14)

d

3 board)

ction of

94)

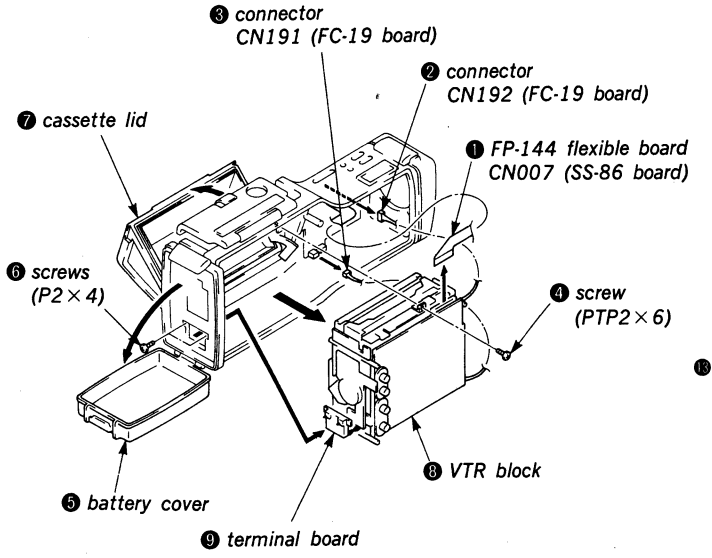
: 8)

❻ connectors

board)

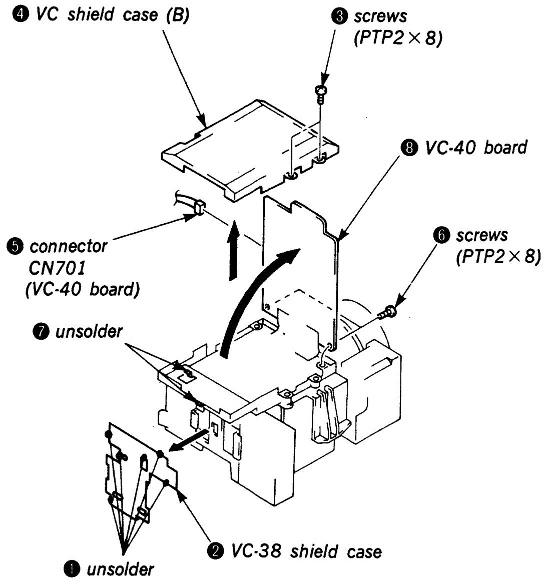
2-4. REMOVING THE VTR BLOCK

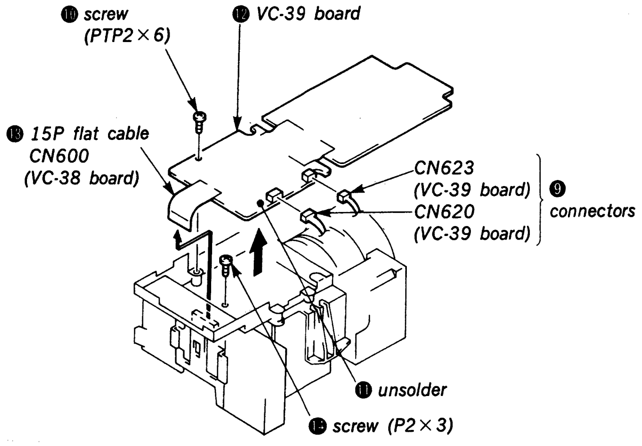
1) Remove the FP-144 flexible board ❶ (CN007).
2) Remove two connectors ❷ (CN192), ❸ (CN191).
3) Remove screw ❹.
4) Opening the battery cover ❺.
5) Remove two serews ❻.
6) Opening the cassette lid ❼, in the direction of arrow.
7) Remove the VTR block ❽.
8) Remove the Terminal board ❾.

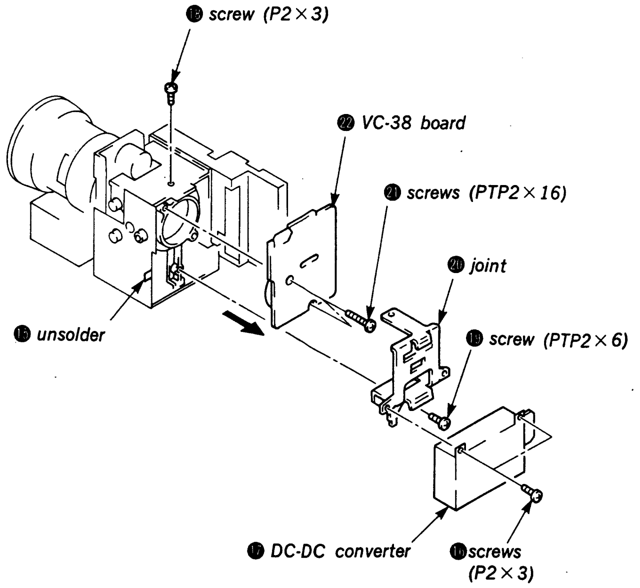

❸ connector
CN191 (FC-19 board)
❷ connector
CN192 (FC-19 board)
❶ FP-144 flexible board
CN007 (SS-86 board)
❼ cassette lid
❻ screws
(P2×4)
❹ screw
(PTP2×6)
❽ VTR block
❺ battery cover
❾ terminal board

2-5. REMOVING THE VC-38 (CCD IMAGER), VC-39 AND VC-40 BOARDS

1) Unsolder (at six point ❶) the VC-38 shield cace ❷.
2) Remove two screws ❸.
3) Remove the VC shield cace (B) ❹.
4) Remove the connector ❺ (CN701).
5) Remove two screws ❻.
6) Unsolder at two point ❼.
7) Remove the VC-40 board ❽.
8) Remove two connectors ❾ (CN620, CN623).
9) Remove screw ❿.
10) Unsolder at one point ⓫.
11) Remove the VC-39 board ⓬ in the direction of arrow.
12) Remove the 15P flat cable ⓭ (CN600).
13) Remove the screw ⓮.
14) Unsolder one point ⓯.
15) Remove two screws ⓰.
16) Remove'the DC-DC converter ⓱.
17) Remove two screw ⓲, ⓳.
18) Remove the joint bracket ⓴.
19) Remove two screws ㉑.
20) Remove the VC-38 board ㉒.

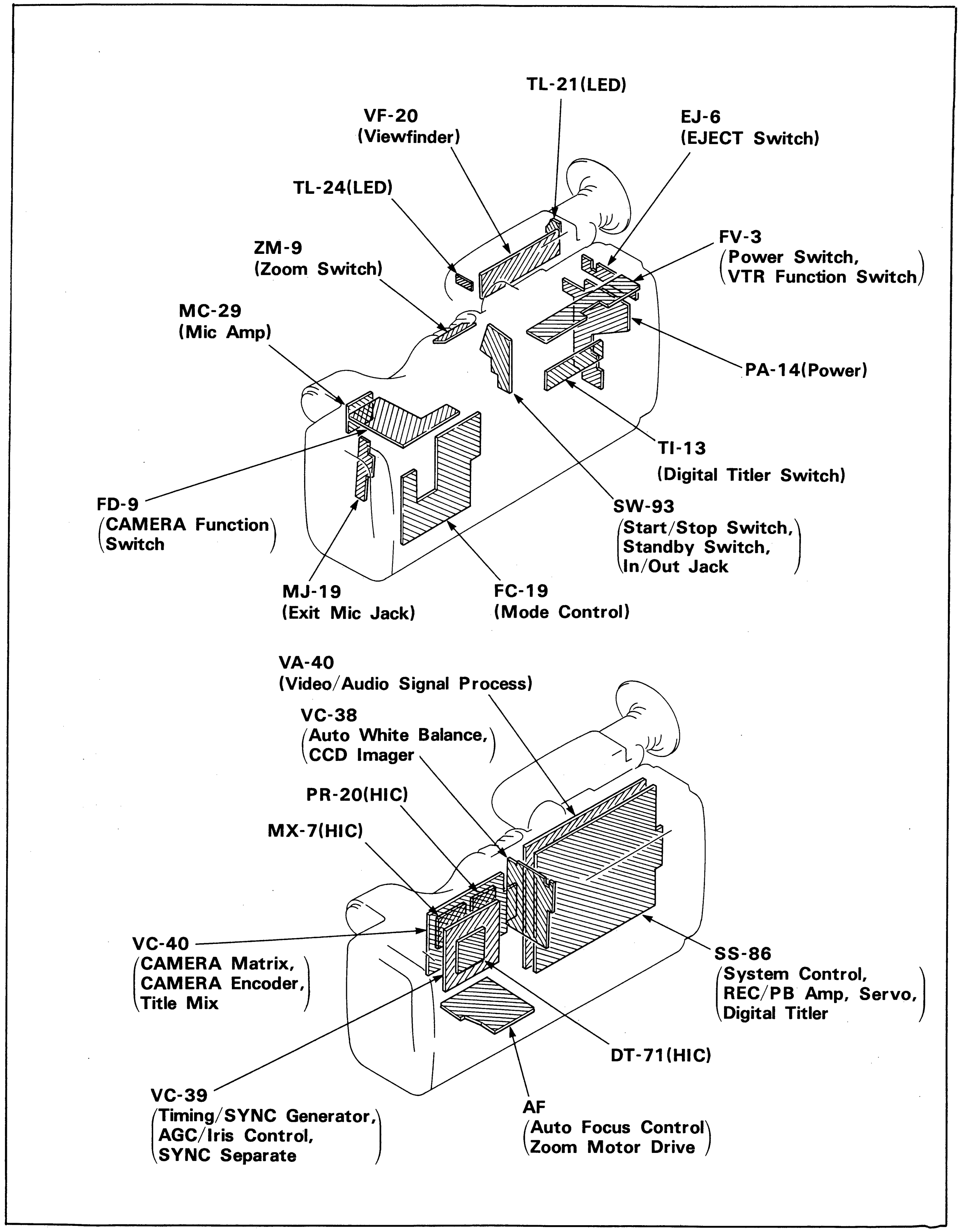

❹ VC shield case (B)
❸ screws
(PTP2×8)
❽ VC-40 board
❺ connector
CN701
(VC-40 board)
❻ screws
(PTP2×8)
❼ unsolder
❶ unsolder
❷ VC-38 shield case


❿ screw
(PTP2×6)
⓬ VC-39 board
⓭ 15P flat cable
CN600
(VC-38 board)
CN623
(VC-39 board)
CN620
(VC-39 board)
❾
connectors
⓫ unsolder
⓮ screw (P2×3)


⓲ screw (P2×3)
㉒ VC-38 board
㉑ screws (PTP2×16)
⓴ joint
⓳ screw (PTP2×6)
⓯ unsolder
⓱ DC-DC converter
⓰screws
(P2×3)

SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

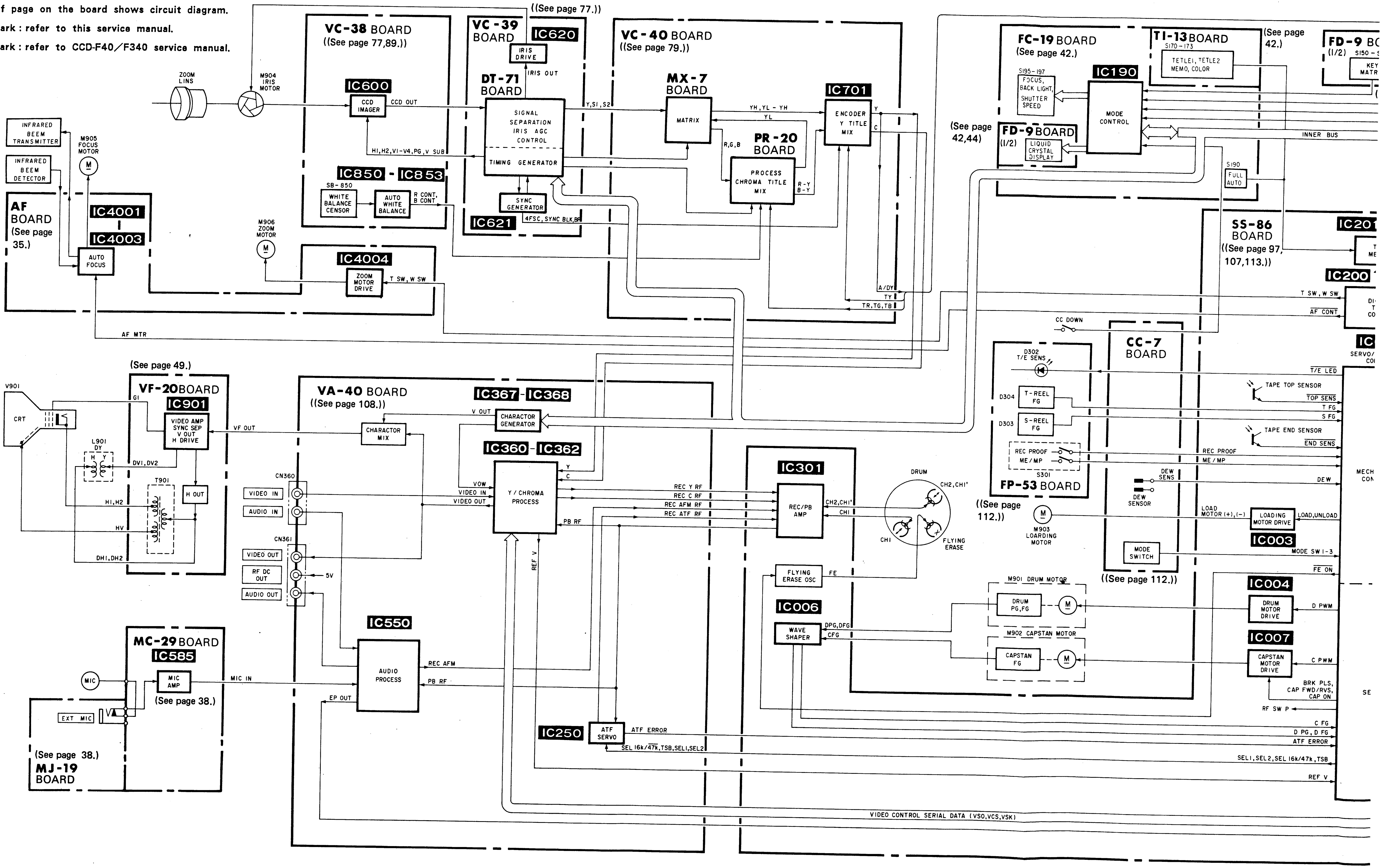

TL-21(LED)
VF-20
(Viewfinder)
EJ-6
(EJECT Switch)
TL-24(LED)
FV-3
(Power Switch,
VTR Function Switch)
ZM-9
(Zoom Switch)
MC-29
(Mic Amp)
PA-14(Power)
TI-13
(Digital Titler Switch)
FD-9
(CAMERA Function
Switch)
SW-93
(Start/Stop Switch,
Standby Switch,
In/Out Jack)
MJ-19
(Exit Mic Jack)
FC-19
(Mode Control)
VA-40
(Video/Audio Signal Process)
VC-38
(Auto White Balance,
CCD Imager)
PR-20(HIC)
MX-7(HIC)
VC-40
(CAMERA Matrix,
CAMERA Encoder,
Title Mix)
SS-86
(System Control,
REC/PB Amp, Servo,
Digital Titler)
DT-71(HIC)
VC-39
(Timing/SYNC Generator,
AGC/Iris Control,
SYNC Separate)
AF
(Auto Focus Control
Zoom Motor Drive)

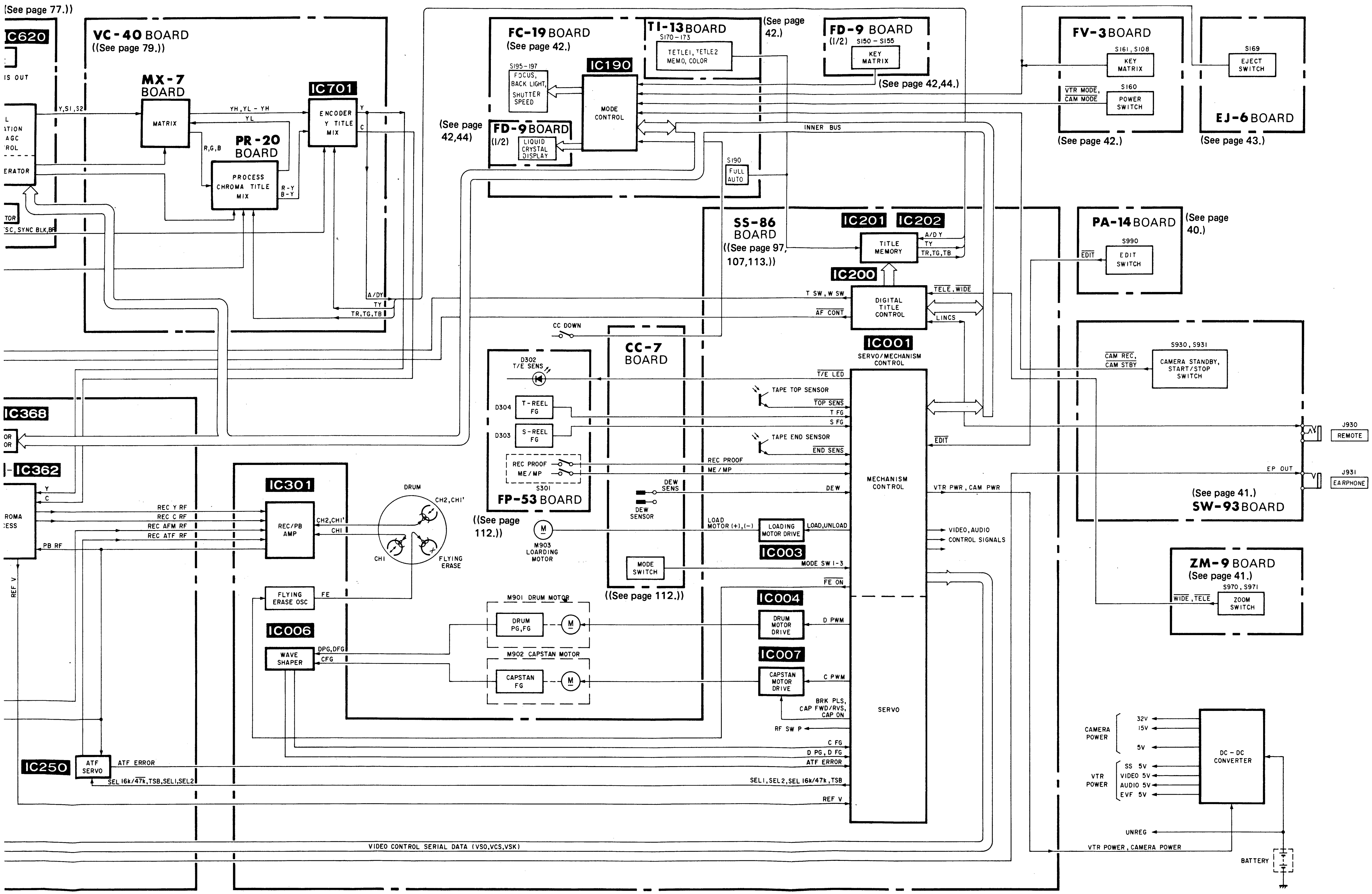
3-2. OVERALL BLOCK DIAGRAM

- Number of page on the board shows circuit diagram.

( ) mark : refer to this service manual.

(( )) mark : refer to CCD-F40/F340 service manual.


((See page 77.))
VC-38 BOARD
((See page 77,89.))
IC600
CCD IMAGER
CCD OUT
H1,H2,V1-V4,PG,V SUB
IC850 - IC853
SB-850
WHITE BALANCE CENSOR
AUTO WHITE BALANCE
R CONT, B CONT
VC-39 BOARD
IC620
IRIS DRIVE
IRIS OUT
DT-71 BOARD
SIGNAL SEPARATION IRIS AGC CONTROL
TIMING GENERATOR
SYNC GENERATOR
IC621
4FSC, SYNC BLK,BF
Y,S1,S2
VC-40 BOARD
((See page 79.))
MX-7 BOARD
MATRIX
YH,YL-YH
YL
R,G,B
PR-20 BOARD
PROCESS CHROMA TITLE MIX
R-Y
B-Y
IC701
ENCODER Y TITLE MIX
Y
C
A/DY
TY
TR,TG,TB
ZOOM LINS
M904 IRIS MOTOR
INFRARED BEEM TRANSMITTER
INFRARED BEEM DETECTOR
M905 FOCUS MOTOR
AF BOARD
(See page 35.)
IC4001
IC4003
AUTO FOCUS
M906 ZOOM MOTOR
IC4004
ZOOM MOTOR DRIVE
T SW, W SW
AF MTR
(See page 49.)
V901
CRT
VF-20 BOARD
G1
IC901
VIDEO AMP SYNC SEP V OUT H DRIVE
VF OUT
L901 DY
H Y
DV1,DV2
T901
H OUT
H1,H2
HV
DH1,DH2
VA-40 BOARD
((See page 108.))
IC367-IC368
V OUT
CHARACTOR GENERATOR
CHARACTOR MIX
IC360-IC362
VOW
VIDEO IN
VIDEO OUT
Y/CHROMA PROCESS
Y
C
REC Y RF
REC C RF
REC AFM RF
REC ATF RF
PB RF
REF V
CN360
VIDEO IN
AUDIO IN
CN361
VIDEO OUT
RF DC OUT
AUDIO OUT
5V
IC550
AUDIO PROCESS
REC AFM
PB RF
EP OUT
MC-29 BOARD
IC585
MIC
MIC AMP
MIC IN
(See page 38.)
EXT MIC
(See page 38.)
MJ-19 BOARD
IC250
ATF SERVO
ATF ERROR
SEL 16k/47k,TSB,SEL1,SEL2
IC301
REC/PB AMP
CH2,CH1'
CH1
DRUM
CH2,CH1'
CH1
FLYING ERASE
FLYING ERASE OSC
FE
IC006
WAVE SHAPER
DPG,DFG
CFG
VIDEO CONTROL SERIAL DATA (VSO,VCS,VSK)
FC-19 BOARD
(See page 42.)
S195-197
FOCUS, BACK LIGHT, SHUTTER SPEED
IC190
MODE CONTROL
TI-13 BOARD
S170-173
TETLE1, TETLE2 MEMO, COLOR
(See page 42.)
FD-9 BO
(1/2) S150-
KEY MATR
(See page 42,44)
FD-9 BOARD
(1/2)
LIQUID CRYSTAL DISPLAY
S190
FULL AUTO
INNER BUS
SS-86 BOARD
((See page 97, 107,113.))
IC201
IC200
T SW, W SW
AF CONT
IC
SERVO/
CC DOWN
D302 T/E SENS
T/E LED
TAPE TOP SENSOR
TOP SENS
T FG
S FG
TAPE END SENSOR
END SENS
D304
T-REEL FG
D303
S-REEL FG
REC PROOF
ME/MP
S301
REC PROOF
ME/MP
FP-53 BOARD
((See page 112.))
CC-7 BOARD
DEW SENS
DEW SENSOR
DEW
MECH
LOAD MOTOR (+),(-)
LOADING MOTOR DRIVE
LOAD,UNLOAD
IC003
M903 LOARDING MOTOR
MODE SWITCH
MODE SW 1-3
((See page 112.))
FE ON
M901 DRUM MOTOR
DRUM PG,FG
IC004
DRUM MOTOR DRIVE
D PWM
M902 CAPSTAN MOTOR
CAPSTAN FG
IC007
CAPSTAN MOTOR DRIVE
C PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
C FG
D PG, D FG
ATF ERROR
SEL1,SEL2,SEL 16k/47k,TSB
REF V
SE

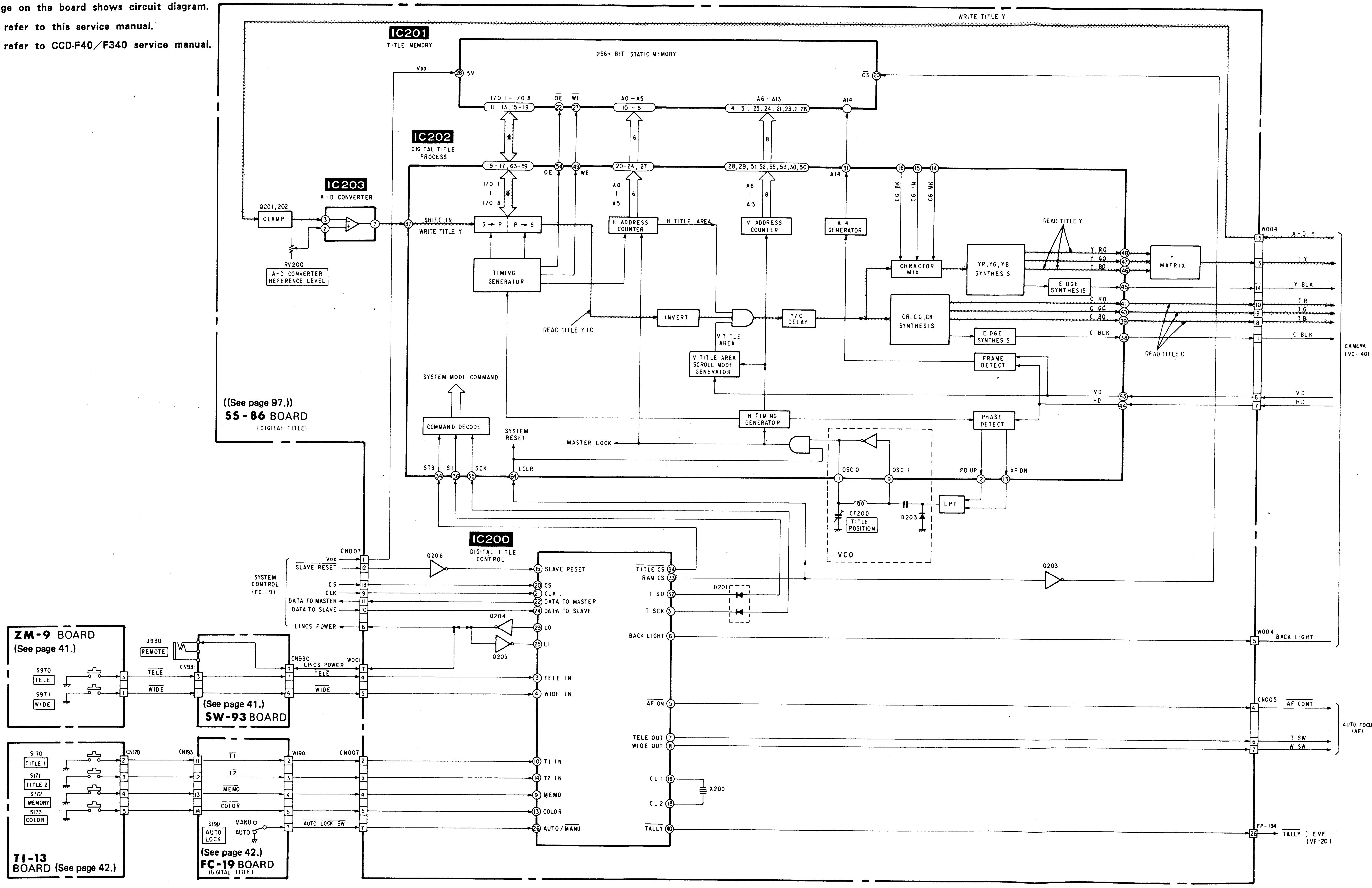
(See page 77.))
IC620
IS OUT
VC-40 BOARD
((See page 79.))
MX-7 BOARD
MATRIX
Y,SI,S2
YH,YL - YH
YL
R,G,B
PR-20 BOARD
PROCESS CHROMA TITLE MIX
R-Y
B-Y
IC701
ENCODER Y TITLE MIX
Y
C
ERATOR
TOR
SC, SYNC BLK,BF
A/DY
TY
TR,TG,TB
FC-19 BOARD
(See page 42.)
S195–197
FOCUS, BACK LIGHT, SHUTTER SPEED
IC190
MODE CONTROL
TI-13 BOARD
S170–173
TETLE1, TETLE2 MEMO, COLOR
(See page 42.)
FD-9 BOARD
(1/2)
S150 – S155
KEY MATRIX
(See page 42,44.)
(See page 42,44)
FD-9 BOARD
(1/2)
LIQUID CRYSTAL DISPLAY
INNER BUS
S190
FULL AUTO
FV-3 BOARD
S161, S108
KEY MATRIX
VTR MODE, CAM MODE
S160
POWER SWITCH
(See page 42.)
S169
EJECT SWITCH
EJ-6 BOARD
(See page 43.)
SS-86 BOARD
((See page 97, 107,113.))
IC201
IC202
TITLE MEMORY
A/D Y
TY
TR,TG,TB
IC200
T SW, W SW
AF CONT
DIGITAL TITLE CONTROL
TELE, WIDE
LINCS
PA-14 BOARD
(See page 40.)
S990
EDIT
EDIT SWITCH
CC DOWN
CC-7 BOARD
IC001
SERVO/MECHANISM CONTROL
S930, S931
CAM REC, CAM STBY
CAMERA STANDBY, START/STOP SWITCH
D302
T/E SENS
T/E LED
TAPE TOP SENSOR
TOP SENS
D304
T-REEL FG
T FG
S FG
D303
S-REEL FG
TAPE END SENSOR
END SENS
EDIT
J930
REMOTE
REC PROOF
ME/MP
S301
FP-53 BOARD
REC PROOF
ME/MP
DEW SENS
DEW SENSOR
DEW
MECHANISM CONTROL
VTR PWR, CAM PWR
EP OUT
J931
EARPHONE
(See page 41.)
SW-93 BOARD
IC368
OR
OR
IC362
Y
C
ROMA
ESS
REC Y RF
REC C RF
REC AFM RF
REC ATF RF
PB RF
IC301
REC/PB AMP
CH2,CH1'
CH1
DRUM
CH2,CH1'
CH1
FLYING ERASE
((See page 112.))
M903 LOARDING MOTOR
LOAD MOTOR (+),(−)
LOADING MOTOR DRIVE
LOAD,UNLOAD
VIDEO, AUDIO CONTROL SIGNALS
IC003
MODE SWITCH
MODE SW 1-3
((See page 112.))
FE ON
REF V
FLYING ERASE OSC
FE
IC006
M901 DRUM MOTOR
DRUM PG,FG
M
IC004
DRUM MOTOR DRIVE
D PWM
ZM-9 BOARD
(See page 41.)
S970, S971
WIDE, TELE
ZOOM SWITCH
WAVE SHAPER
DPG,DFG
CFG
M902 CAPSTAN MOTOR
CAPSTAN FG
M
IC007
CAPSTAN MOTOR DRIVE
C PWM
BRK PLS, CAP FWD/RVS, CAP ON
SERVO
RF SW P
C FG
D PG, D FG
ATF ERROR
CAMERA POWER
32V
15V
5V
VTR POWER
SS 5V
VIDEO 5V
AUDIO 5V
EVF 5V
DC - DC CONVERTER
IC250
ATF SERVO
ATF ERROR
SEL 16k/47k,TSB,SEL1,SEL2
SEL1,SEL2,SEL 16k/47k,TSB
REF V
UNREG
VIDEO CONTROL SERIAL DATA (VSO,VCS,VSK)
VTR POWER, CAMERA POWER
BATTERY

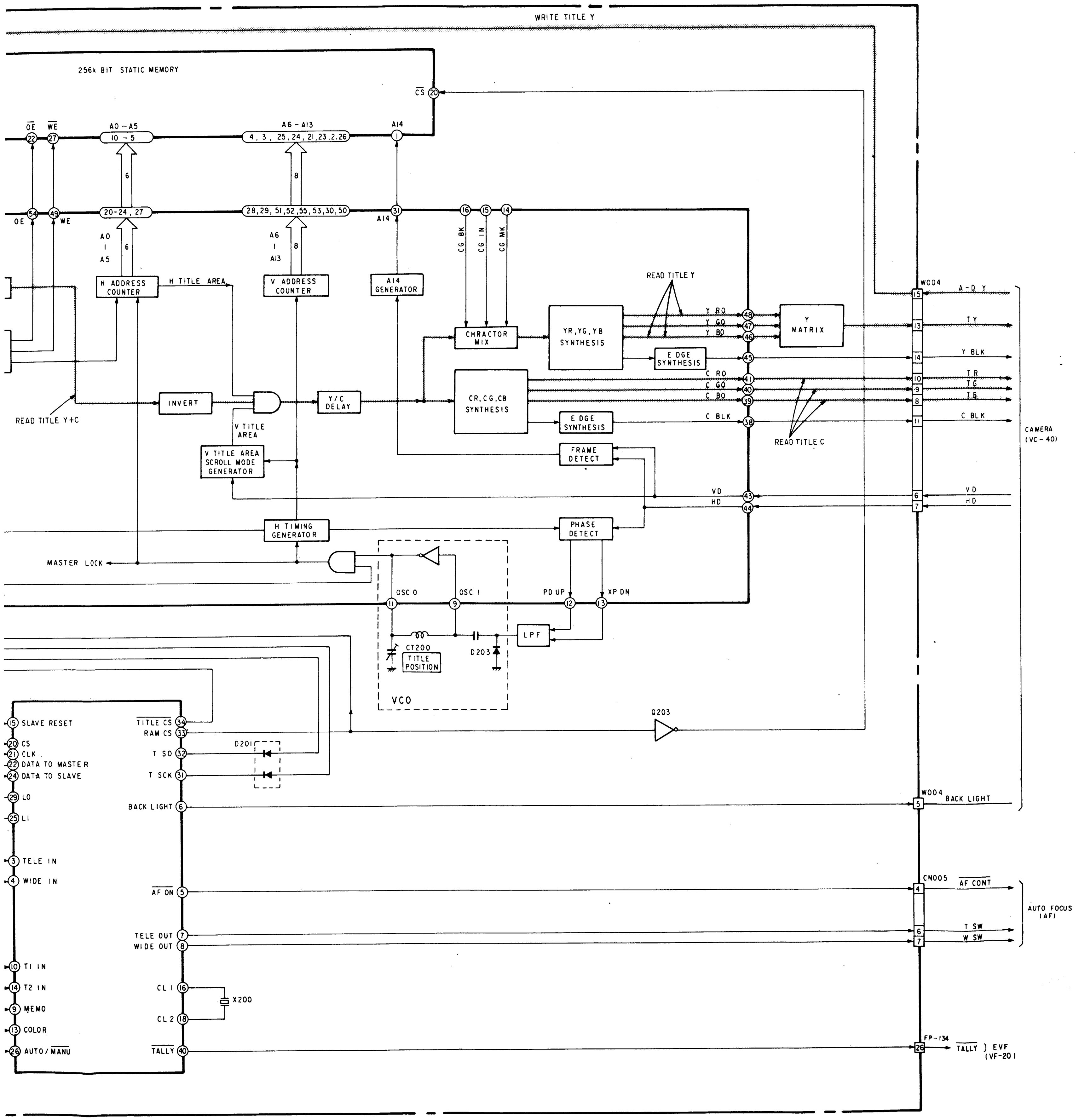
3-3. DIGITAL TITLER BLOCK DIAGRAM

- Number of page on the board shows circuit diagram.

( ) mark : refer to this service manual.

(( )) mark : refer to CCD-F40/F340 service manual.


WRITE TITLE Y
IC201
TITLE MEMORY
256k BIT STATIC MEMORY
VDD
28 5V
CS 20
I/O 1 - I/O 8
11-13, 15-19
OE 22
WE 27
A0 - A5
10 - 5
A6 - A13
4, 3, 25, 24, 21, 23, 2, 26
A14
1
8
6
8
IC202
DIGITAL TITLE PROCESS
19-17, 63-59
OE 54
WE 49
20-24, 27
28, 29, 51, 52, 55, 53, 30, 50
A14 31
16 15 14
CG BK
CG IN
CG MK
I/O 1 | I/O 8
A0 | A5
A6 | A13
IC203
A-D CONVERTER
Q201, 202
CLAMP
RV200
A-D CONVERTER REFERENCE LEVEL
SHIFT IN
WRITE TITLE Y
37
S → P
P → S
TIMING GENERATOR
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
A14 GENERATOR
READ TITLE Y+C
INVERT
V TITLE AREA
V TITLE AREA SCROLL MODE GENERATOR
Y/C DELAY
CHRACTOR MIX
YR, YG, YB SYNTHESIS
READ TITLE Y
Y RO 48
Y GO 47
Y BO 46
E DGE SYNTHESIS 45
CR, CG, CB SYNTHESIS
C RO 41
C GO 40
C BO 39
C BLK 38
E DGE SYNTHESIS
Y MATRIX
READ TITLE C
FRAME DETECT
PHASE DETECT
VD 43
HD 44
SYSTEM MODE COMMAND
COMMAND DECODE
SYSTEM RESET
MASTER LOCK
H TIMING GENERATOR
STB 34
SI 36
SCK 35
LCLR 64
OSC 0 11
OSC I 9
PD UP 12
XP DN 13
LPF
CT200
TITLE POSITION
D203
VCO
Q203
((See page 97.))
SS-86 BOARD
(DIGITAL TITLE)
W004
A-D Y
TY
Y BLK
TR
TG
TB
C BLK
VD
HD
CAMERA (VC-40)
IC200
DIGITAL TITLE CONTROL
Q206
CN007
SYSTEM CONTROL (FC-19)
VDD
SLAVE RESET
CS
CLK
DATA TO MASTER
DATA TO SLAVE
LINCS POWER
15 SLAVE RESET
20 CS
21 CLK
22 DATA TO MASTER
24 DATA TO SLAVE
Q204
29 LO
25 LI
Q205
TITLE CS 34
RAM CS 33
T SO 32
T SCK 31
D201
BACK LIGHT 6
W004 BACK LIGHT
3 TELE IN
4 WIDE IN
AF ON 5
CN005 AF CONT
T SW
W SW
AUTO FOCUS (AF)
TELE OUT 7
WIDE OUT 8
10 T1 IN
14 T2 IN
9 MEMO
13 COLOR
26 AUTO/MANU
CL1 16
CL2 18
X200
TALLY 40
FP-134 TALLY
EVF (VF-20)
ZM-9 BOARD
(See page 41.)
S970 TELE
S971 WIDE
TELE
WIDE
J930 REMOTE
CN931
CN930
LINCS POWER
TELE
WIDE
W001
(See page 41.)
SW-93 BOARD
S170 TITLE 1
S171 TITLE 2
S172 MEMORY
S173 COLOR
CN170
CN193
T1
T2
MEMO
COLOR
W190
CN007
S190 AUTO LOCK
MANU
AUTO
AUTO LOCK SW
TI-13 BOARD (See page 42.)
(See page 42.)
FC-19 BOARD
(DIGITAL TITLE)


WRITE TITLE Y
256k BIT STATIC MEMORY
CS 20
OE 22
WE 27
A0 – A5
10 – 5
A6 – A13
4, 3, 25, 24, 21, 23, 2, 26
A14 1
6
8
OE 54
WE 49
20-24, 27
28, 29, 51, 52, 55, 53, 30, 50
A14 31
A0 I A5
A6 I A13
16 15 14
CG BK
CG IN
CG MK
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
A14 GENERATOR
READ TITLE Y
CHRACTOR MIX
YR, YG, YB SYNTHESIS
Y RO 48
Y GO 47
Y BO 46
Y MATRIX
E DGE SYNTHESIS 45
CR, CG, CB SYNTHESIS
C RO 41
C GO 40
C BO 39
E DGE SYNTHESIS
C BLK 38
READ TITLE C
INVERT
Y/C DELAY
READ TITLE Y+C
V TITLE AREA
V TITLE AREA SCROLL MODE GENERATOR
FRAME DETECT
VD 43
HD 44
H TIMING GENERATOR
PHASE DETECT
MASTER LOCK
OSC O 11
OSC I 9
PD UP 12
XP DN 13
LPF
CT200
TITLE POSITION
D203
VCO
Q203
W004
15 A-D Y
13 TY
14 Y BLK
10 TR
9 TG
8 TB
11 C BLK
6 VD
7 HD
CAMERA (VC-40)
W004 5 BACK LIGHT
15 SLAVE RESET
20 CS
21 CLK
22 DATA TO MASTER
24 DATA TO SLAVE
29 LO
25 LI
3 TELE IN
4 WIDE IN
10 T1 IN
14 T2 IN
9 MEMO
13 COLOR
26 AUTO/MANU
TITLE CS 34
RAM CS 33
D201
T SO 32
T SCK 31
BACK LIGHT 6
AF ON 5
TELE OUT 7
WIDE OUT 8
CL 1 16
CL 2 18
X200
TALLY 40
CN005
4 AF CONT
6 T SW
7 W SW
AUTO FOCUS (AF)
FP-134
26 TALLY) EVF (VF-20)

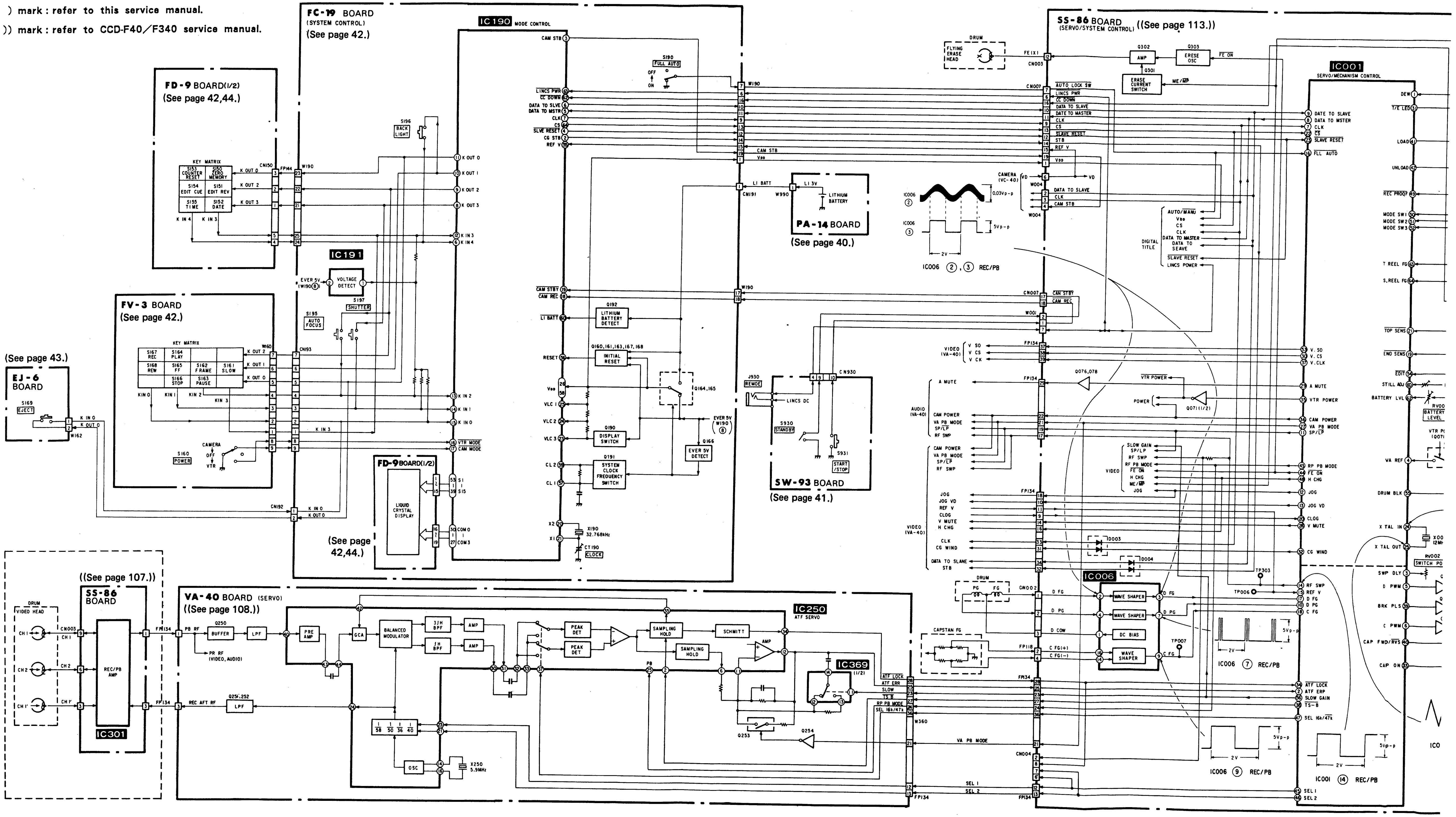
17

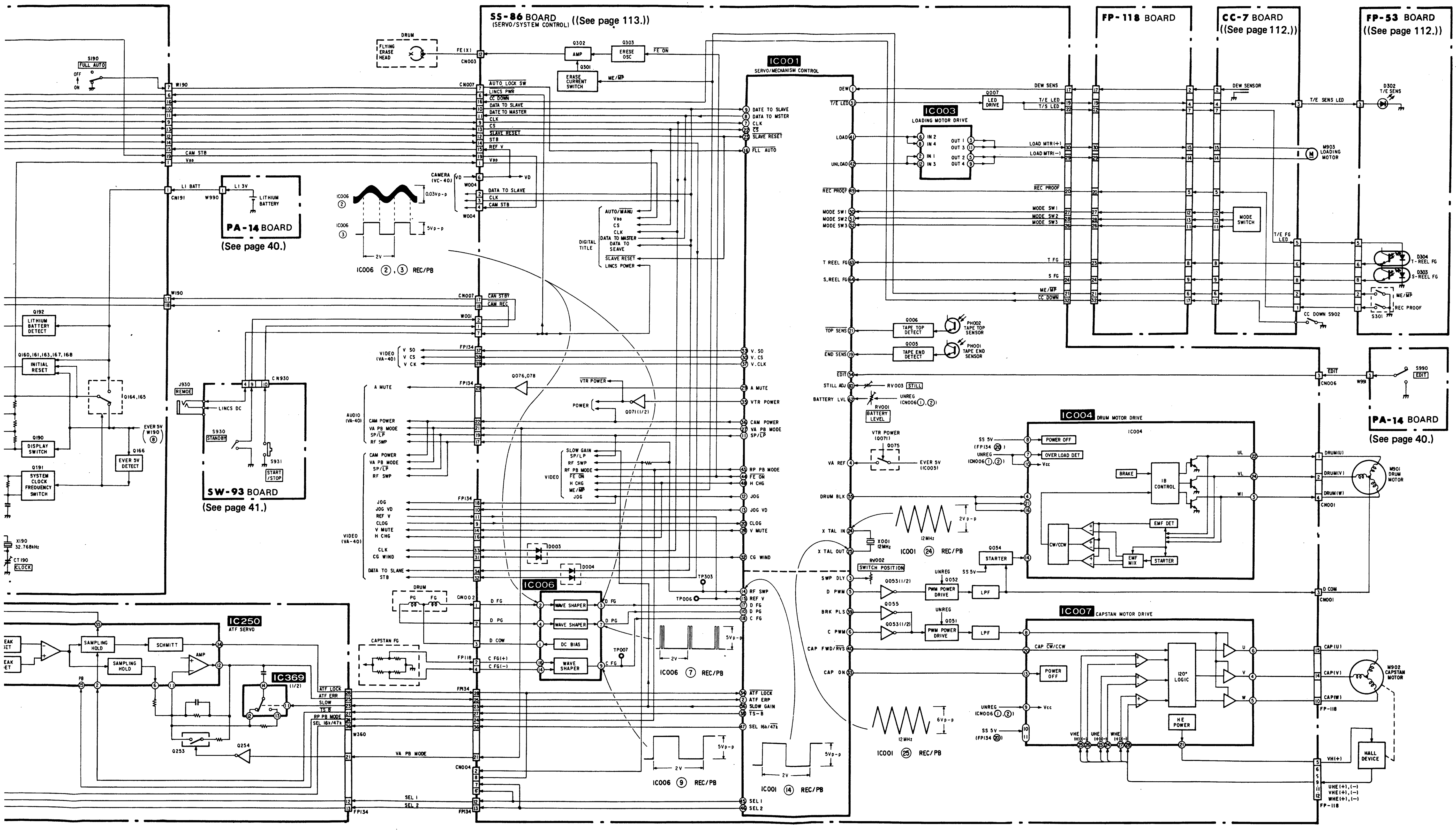
3-4. SERVO/SYSTEM CONTROL BLOCK DIAGRAM

- Number of page on the board shows circuit diagram.

(   ) mark : refer to this service manual.

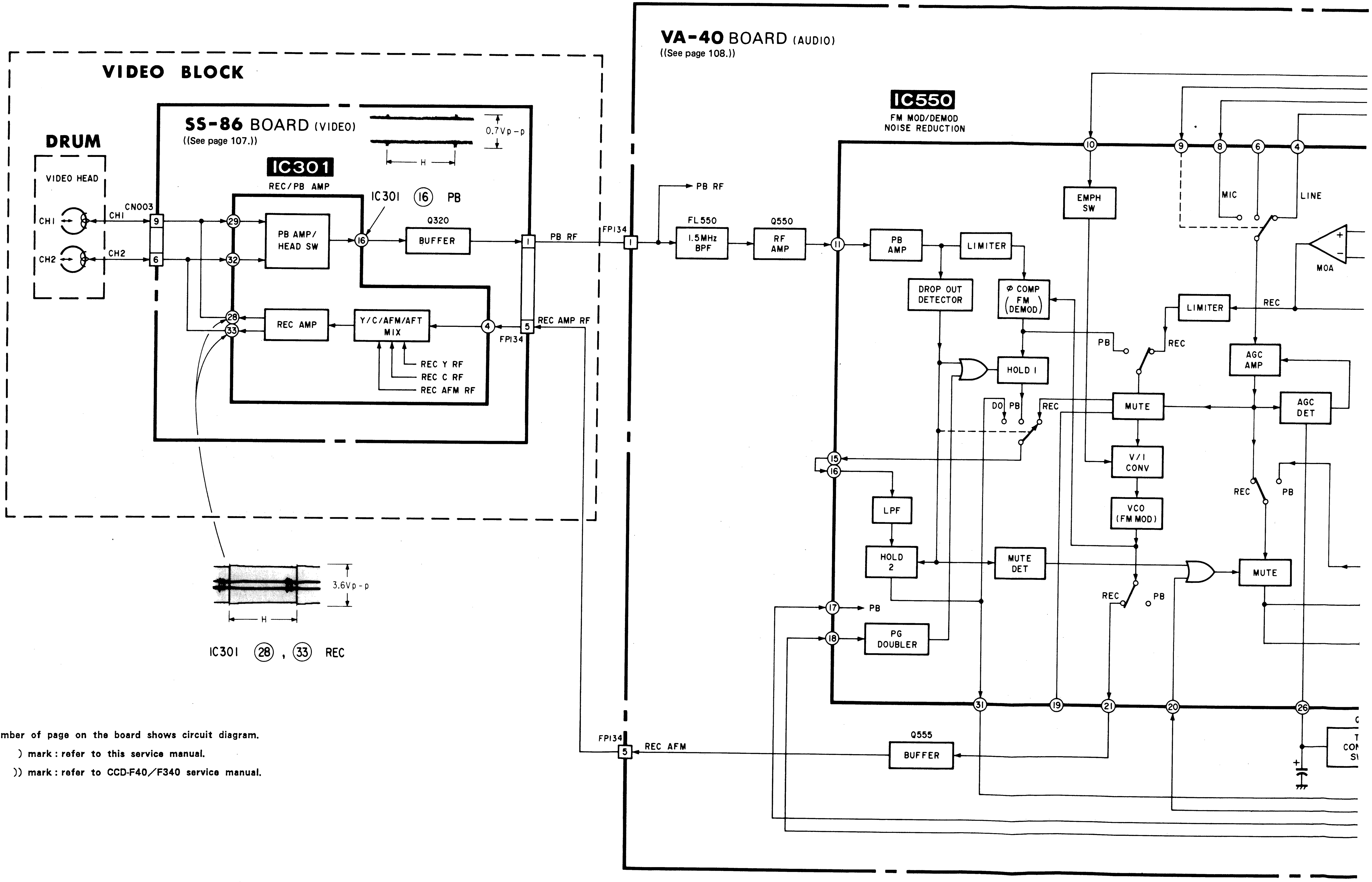
((   )) mark : refer to CCD-F40/F340 service manual.


FC-19 BOARD
(SYSTEM CONTROL)
(See page 42.)
IC190 MODE CONTROL
FD-9 BOARD(1/2)
(See page 42,44.)
KEY MATRIX
S153 COUNTER RESET
S150 ZERO MEMORY
S154 EDIT CUE
S151 EDIT REV
S155 TIME
S152 DATE
FV-3 BOARD
(See page 42.)
S167 REC
S164 PLAY
S168 REW
S165 FF
S162 FRAME
S161 SLOW
S166 STOP
S163 PAUSE
S160 POWER
CAMERA
OFF
VTR
(See page 43.)
EJ-6 BOARD
S169 EJECT
IC191
VOLTAGE DETECT
EVER 5V (W190⑧)
S196 BACK LIGHT
S197 SHUTTER
S195 AUTO FOCUS
S190 FULL AUTO
OFF
ON
Q192 LITHIUM BATTERY DETECT
Q160,161,163,167,168 INITIAL RESET
Q164,165
Q190 DISPLAY SWITCH
Q191 SYSTEM CLOCK FREQUENCY SWITCH
Q166 EVER 5V DETECT
X190 32.768kHz
CT190 CLOCK
FD-9 BOARD(1/2)
LIQUID CRYSTAL DISPLAY
(See page 42,44.)
CAM STB
LINCS PWR
CC DOWN
DATA TO SLVE
DATA TO MSTR
CLK
CS
SLVE RESET
CG STB
REF V
CAM STBY
CAM REC
LI BATT
RESET
VLC 1
VLC 2
VLC 3
CL 2
CL 1
X2
X1
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
VTR MODE
CAM MODE
COM 0
COM 3
PA-14 BOARD
(See page 40.)
LITHIUM BATTERY
J930 REMOTE
LINCS DC
S930 STANDBY
S931 START/STOP
SW-93 BOARD
(See page 41.)
((See page 107.))
SS-86 BOARD
DRUM VIDEO HEAD
CH1
CH2
CH1'
REC/PB AMP
IC301
VA-40 BOARD (SERVO)
((See page 108.))
Q250 BUFFER
LPF
PR RF (VIDEO, AUDIO)
Q251,252 LPF
REC AFT RF
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
AMP
PEAK DET
SAMPLING HOLD
SCHMITT
IC250 ATF SERVO
IC369 (1/2)
Q253
Q254
OSC
X250 5.9MHz
ATF LOCK
ATF ERR
SLOW
TS B
RP PB MODE
SEL 16h/47h
VA PB MODE
SEL 1
SEL 2
DRUM FLYING ERASE HEAD
SS-86 BOARD (SERVO/SYSTEM CONTROL) ((See page 113.))
Q302 AMP
Q303 ERESE OSC
Q301 ERASE CURRENT SWITCH
FE ON
ME/MP
IC001 SERVO/MECHANISM CONTROL
AUTO LOCK SW
DATE TO SLAVE
DATE TO MASTER
SLAVE RESET
STB
CAMERA (VC-40)
DATA TO SLAVE
IC006 ②
IC006 ③
0.03Vp-p
5Vp-p
2V
IC006 ②,③ REC/PB
DIGITAL TITLE
AUTO/MANU
DATA TO MASTER
LINCS POWER
VIDEO (VA-40)
V SO
V CS
V CK
Q076,078
VTR POWER
POWER
Q071(1/2)
A MUTE
AUDIO (VA-40)
CAM POWER
VA PB MODE
SP/LP
RF SWP
SLOW GAIN
RF PB MODE
H CHG
JOG
JOG VD
REF V
CLOG
V MUTE
CG WIND
DATA TO SLANE
D003
D004
TP303
IC006
WAVE SHAPER
DC BIAS
D FG
D PG
D COW
C FG(+)
C FG(-)
CAPSTAN FG
TP006
TP007
IC006 ⑦ REC/PB
IC006 ⑨ REC/PB
IC001 ⑭ REC/PB
DEW
T/E LED
LOAD
UNLOAD
REC PROOF
MODE SW1
MODE SW2
MODE SW3
T REEL FG
S.REEL FG
TOP SENS
END SENS
EDIT
STILL ADJ
BATTERY LVL
RV001 BATTERY LEVEL
VA REF
DRUM BLK
X TAL IN
X TAL OUT
RV002 SWITCH PO
SWP DLY
D PWM
BRK PLS
C PWM
CAP FWD/RVS
CAP ON
FLL AUTO
TS-B
SEL 16h/47h
ICO



SS-86 BOARD ((See page 113.))
(SERVO/SYSTEM CONTROL)
FP-118 BOARD
CC-7 BOARD ((See page 112.))
FP-53 BOARD ((See page 112.))
PA-14 BOARD (See page 40.)
SW-93 BOARD (See page 41.)
IC001 SERVO/MECHANISM CONTROL
IC003 LOADING MOTOR DRIVE
IC004 DRUM MOTOR DRIVE
IC006
IC007 CAPSTAN MOTOR DRIVE
IC250 ATF SERVO
IC369 (1/2)
S190 FULL AUTO
LITHIUM BATTERY
Q192 LITHIUM BATTERY DETECT
INITIAL RESET
Q190 DISPLAY SWITCH
Q191 SYSTEM CLOCK FREQUENCY SWITCH
X190 32.768kHz
CT190 CLOCK
Q164,165
Q166 EVER 5V DETECT
J930 REMOTE
S930 STANDBY
S931 START/STOP
LINCS DC
FLYING ERASE HEAD
DRUM
Q302 AMP
Q303 ERESE OSC
Q301 ERASE CURRENT SWITCH
FE ON
ME/MP
AUTO LOCK SW
LINCS PWR
CC DOWN
DATA TO SLAVE
DATE TO MASTER
CLK
CS
SLAVE RESET
STB
REF V
VDD
CAM STB
CAMERA (VC-40)
DIGITAL TITLE
AUTO/MANU
CAM STBY
CAM REC
VIDEO (VA-40)
V SO
V CS
V CK
A MUTE
VTR POWER
Q076,078
Q071(1/2)
POWER
AUDIO (VA-40)
CAM POWER
VA PB MODE
SP/LP
RF SWP
SLOW GAIN
FE ON
H CHG
JOG
JOG VD
CLOG
V MUTE
CG WIND
D003
D004
TP303
TP006
TP007
D FG
D PG
D COW
C FG(+)
C FG(-)
WAVE SHAPER
DC BIAS
CAPSTAN FG
PG FG
SAMPLING HOLD
SCHMITT
AMP
Q253
Q254
ATF LOCK
ATF ERR
SLOW
TS B
RP PB MODE
SEL 16k/47k
SEL 1
SEL 2
W360
CN004
FP134
FP118
CN007
CN003
W190
W004
W001
CN191
W990
CN930
IC006 ②, ③ REC/PB
0.03Vp-p
5Vp-p
2V
IC006 ⑦ REC/PB
IC006 ⑨ REC/PB
IC001 ⑭ REC/PB
IC001 ㉔ REC/PB
IC001 ㉕ REC/PB
12MHz
2Vp-p
6Vp-p
DEW
T/E LED
LOAD
UNLOAD
REC PROOF
MODE SW1
MODE SW2
MODE SW3
T REEL FG
S REEL FG
TOP SENS
END SENS
EDIT
STILL ADJ
BATTERY LVL
VA REF
DRUM BLK
X TAL IN
X TAL OUT
SWP DLY
D PWM
BRK PLS
C PWM
CAP FWD/RVS
CAP ON
Q007 LED DRIVE
DEW SENS
T/E LED
T/S LED
LOAD MTR(+)
LOAD MTR(-)
T FG
S FG
ME/MP
CC DOWN
IN 2
IN 4
IN 1
IN 3
OUT 1
OUT 3
OUT 2
OUT 4
DEW SENSOR
MODE SWITCH
T/E FG LED
T/E SENS LED
D302 T/E SENS
M903 LOADING MOTOR
D304 T-REEL FG
D303 S-REEL FG
REC PROOF
CC DOWN S902
S301
Q006 TAPE TOP DETECT
PH002 TAPE TOP SENSOR
Q005 TAPE END DETECT
PH001 TAPE END SENSOR
RV003 STILL
RV001 BATTERY LEVEL
UNREG (CN006①,②)
VTR POWER (Q071)
Q075
EVER 5V (IC005)
X001 12MHz
RV002 SWITCH POSITION
Q053(1/2)
Q052
PWM POWER DRIVE
LPF
Q055
Q051
Q054 STARTER
SS 5V (FP134 ㉙)
POWER OFF
OVER LOAD DET
BRAKE
IB CONTROL
EMF DET
CW/CCW
EMF MIX
STARTER
UL
VL
WL
DRUM(U)
DRUM(V)
DRUM(W)
M901 DRUM MOTOR
D COM
CN001
CN006
S990 EDIT
W991
CAP CW/CCW
POWER OFF
120° LOGIC
HE POWER
CAP(U)
CAP(V)
CAP(W)
M902 CAPSTAN MOTOR
HALL DEVICE
VH(+)
UHE(+),(-)
VHE(+),(-)
WHE(+),(-)
FP-118

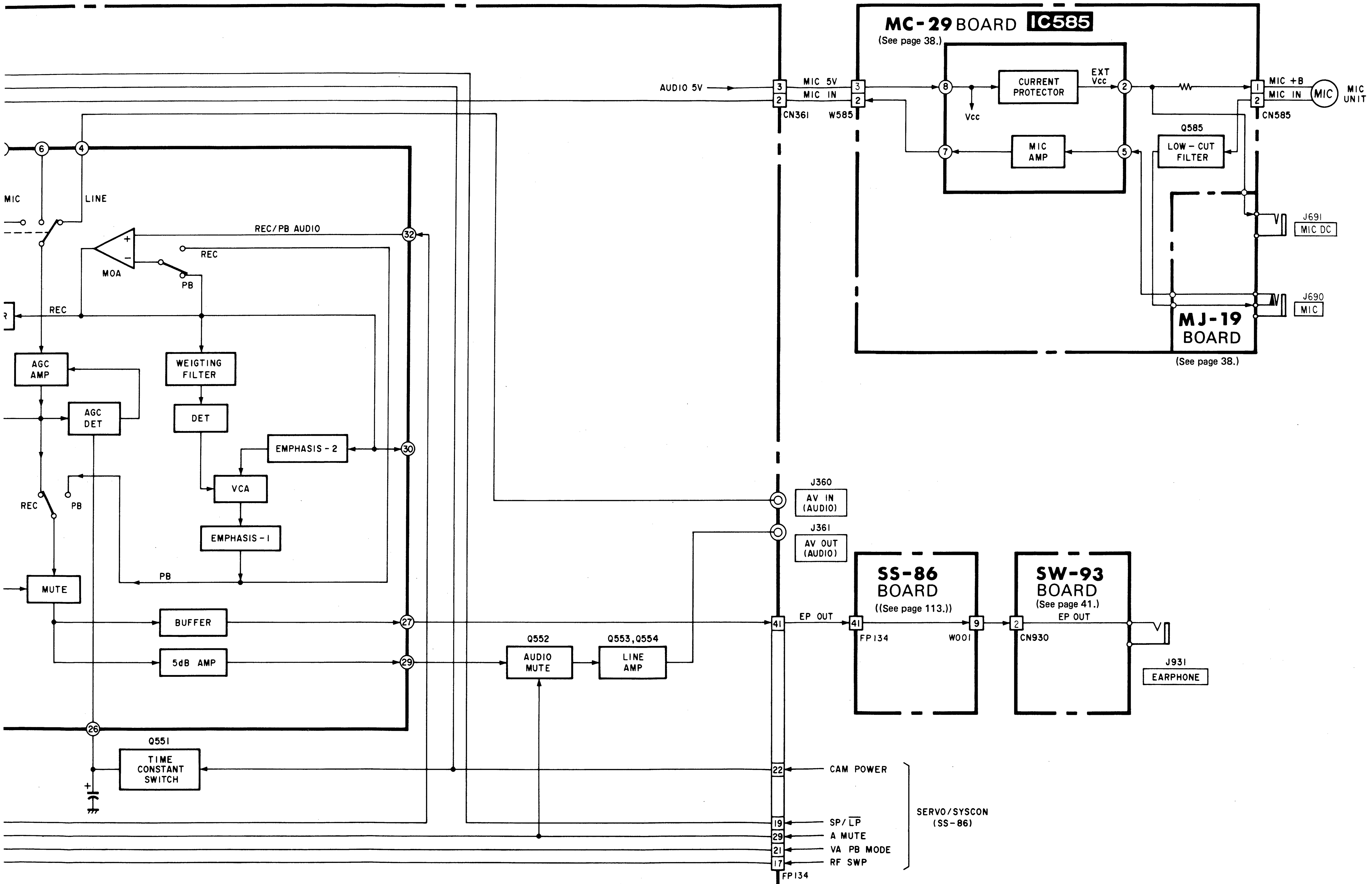
3-5. AUDIO BLOCK DIAGRAM


VIDEO BLOCK
DRUM
VIDEO HEAD
CH1
CH2
CN003
SS-86 BOARD (VIDEO)
((See page 107.))
0.7Vp-p
H
IC301
REC/PB AMP
IC301 ⑯ PB
PB AMP/ HEAD SW
Q320
BUFFER
PB RF
REC AMP
Y/C/AFM/AFT MIX
REC Y RF
REC C RF
REC AFM RF
REC AMP RF
FP134
3.6Vp-p
IC301 ㉘, ㉝ REC
VA-40 BOARD (AUDIO)
((See page 108.))
IC550
FM MOD/DEMOD
NOISE REDUCTION
PB RF
FL550
1.5MHz BPF
Q550
RF AMP
PB AMP
LIMITER
DROP OUT DETECTOR
φ COMP (FM DEMOD)
HOLD 1
DO
PB
REC
LPF
HOLD 2
MUTE DET
PG DOUBLER
EMPH SW
MIC
LINE
MOA
LIMITER
REC
AGC AMP
AGC DET
MUTE
V/I CONV
VCO (FM MOD)
REC
PB
MUTE
Q555
BUFFER
REC AFM
FP134

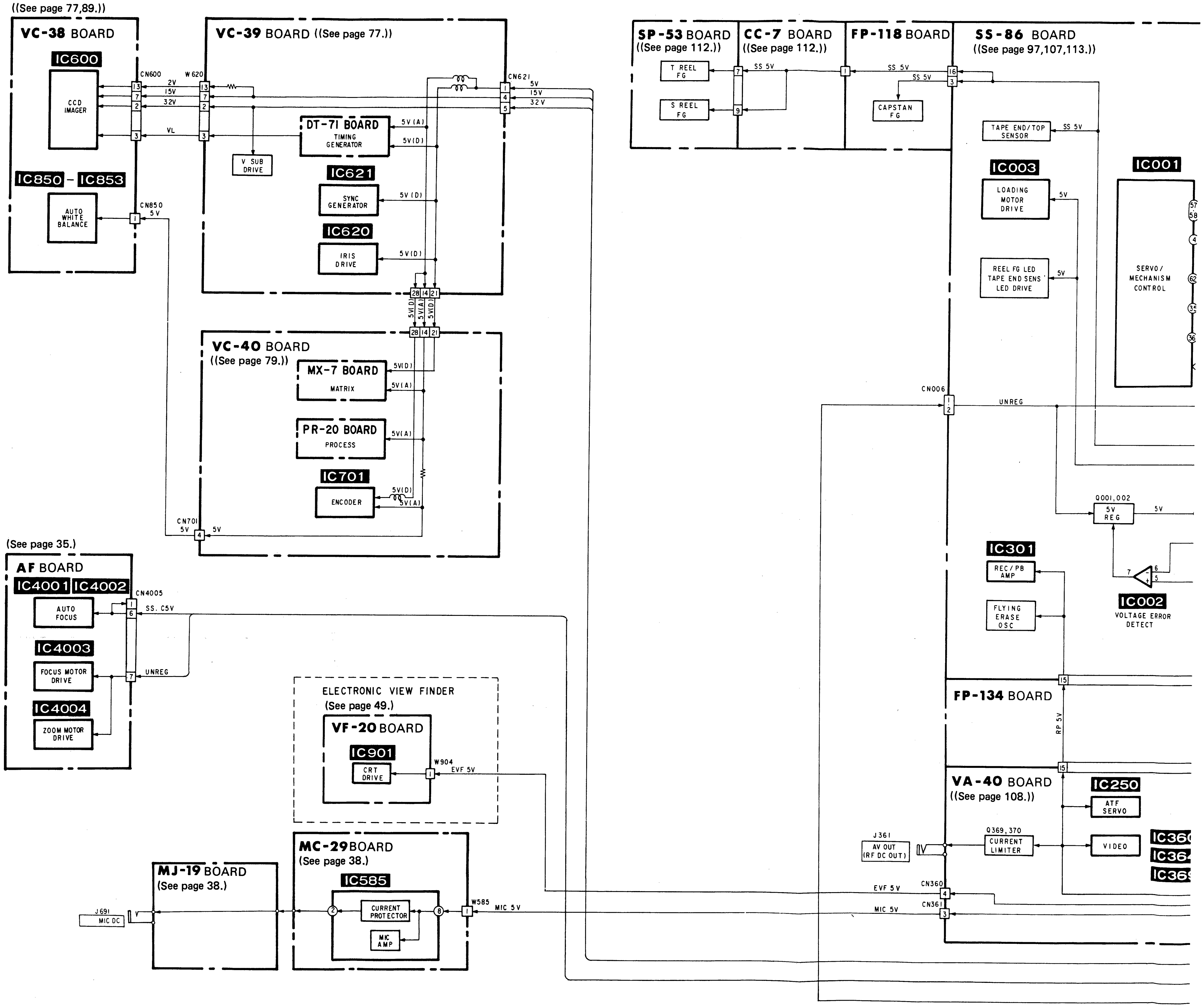
- Number of page on the board shows circuit diagram.

( ) mark : refer to this service manual.

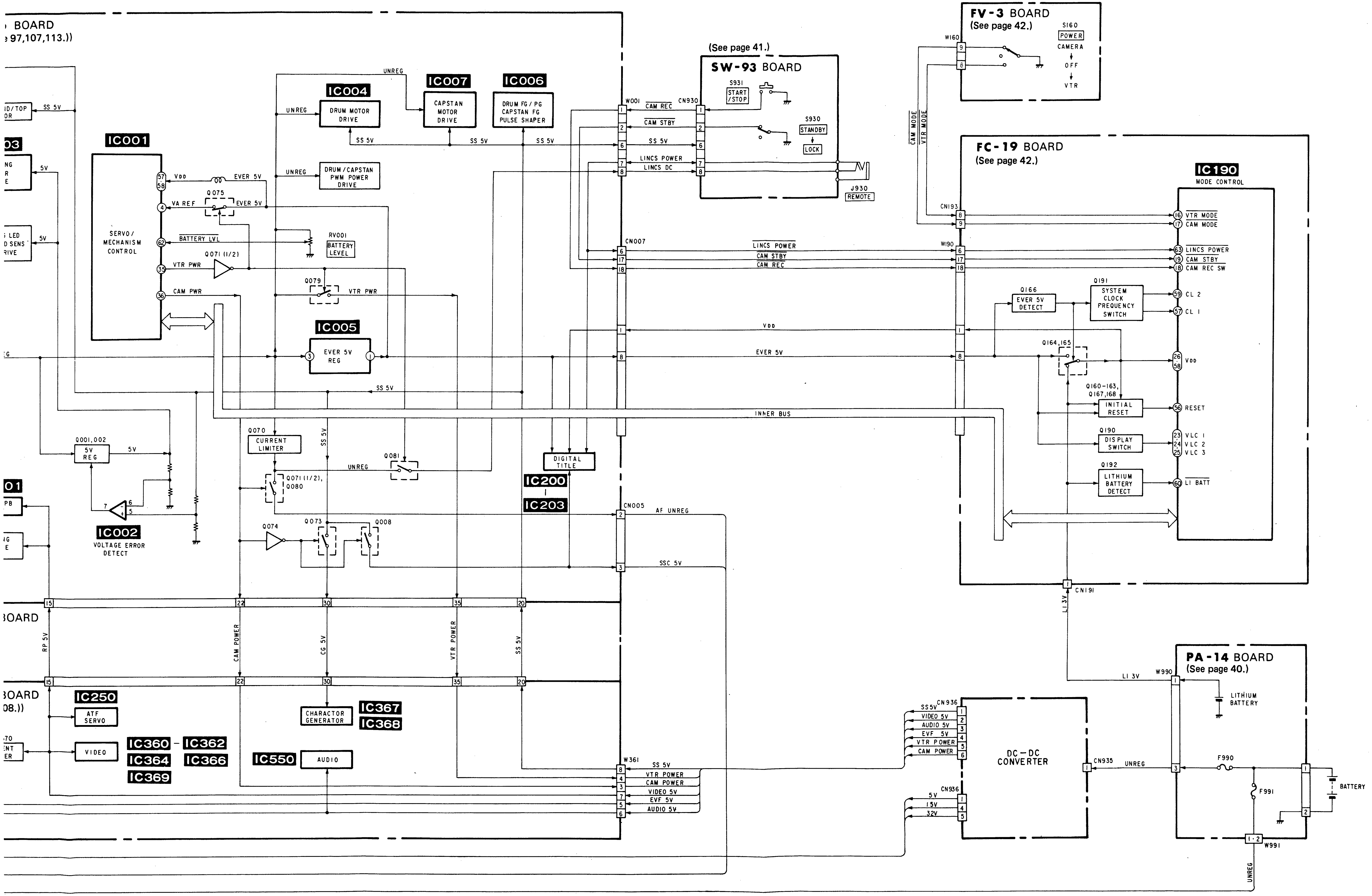
(( )) mark : refer to CCD-F40/F340 service manual.


MC-29 BOARD IC585
(See page 38.)
AUDIO 5V
MIC 5V
MIC IN
CN361
W585
CURRENT PROTECTOR
EXT Vcc
Vcc
MIC AMP
Q585
LOW-CUT FILTER
MIC +B
MIC IN
MIC
MIC UNIT
CN585
J691
MIC DC
J690
MIC
MJ-19 BOARD
(See page 38.)
MIC
LINE
REC/PB AUDIO
REC
MOA
PB
REC
AGC AMP
AGC DET
WEIGTING FILTER
DET
EMPHASIS-2
VCA
EMPHASIS-1
REC
PB
PB
MUTE
BUFFER
5dB AMP
Q552
AUDIO MUTE
Q553,Q554
LINE AMP
J360
AV IN (AUDIO)
J361
AV OUT (AUDIO)
EP OUT
SS-86 BOARD
((See page 113.))
FP134
W001
SW-93 BOARD
(See page 41.)
EP OUT
CN930
J931
EARPHONE
Q551
TIME CONSTANT SWITCH
CAM POWER
SP/LP
A MUTE
VA PB MODE
RF SWP
SERVO/SYSCON (SS-86)
FP134
6
4
32
30
27
29
26
41
22
19
29
21
17

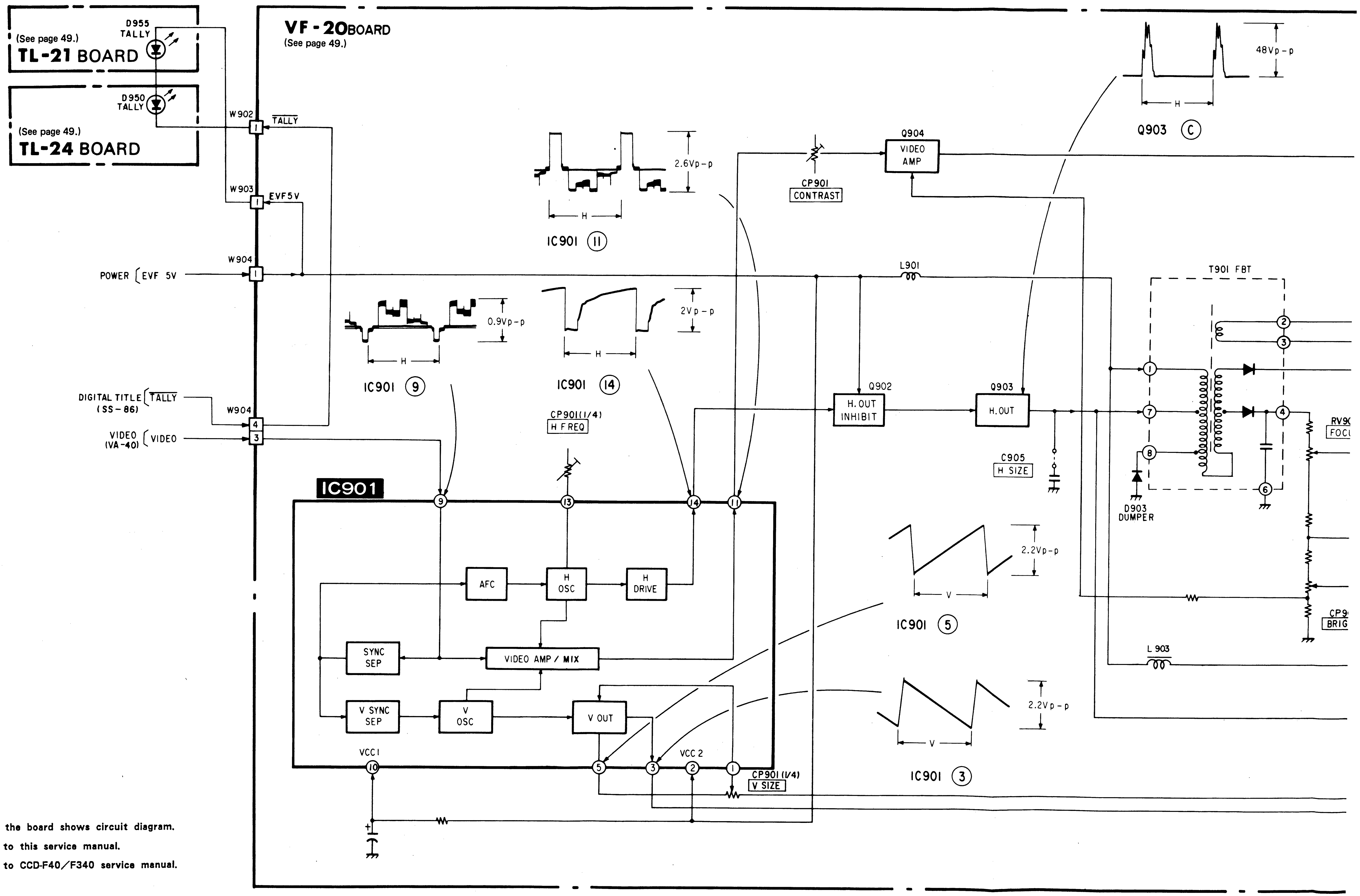
3-6. POWER BLOCK DIAGRAM


((See page 77,89.))
VC-38 BOARD
IC600
CCD IMAGER
CN600
2V
15V
32V
VL
IC850 - IC853
AUTO WHITE BALANCE
CN850
5V
VC-39 BOARD ((See page 77.))
W620
V SUB DRIVE
DT-71 BOARD
TIMING GENERATOR
5V(A)
5V(D)
IC621
SYNC GENERATOR
IC620
IRIS DRIVE
CN621
5V
15V
32V
28 14 21
5V(D)
5V(A)
5V(D)
VC-40 BOARD
((See page 79.))
MX-7 BOARD
MATRIX
PR-20 BOARD
PROCESS
IC701
ENCODER
CN701
5V
5V
(See page 35.)
AF BOARD
IC4001
IC4002
AUTO FOCUS
IC4003
FOCUS MOTOR DRIVE
IC4004
ZOOM MOTOR DRIVE
CN4005
SS. C5V
UNREG
ELECTRONIC VIEW FINDER
(See page 49.)
VF-20 BOARD
IC901
CRT DRIVE
W904
EVF 5V
MJ-19 BOARD
(See page 38.)
J691
MIC DC
MC-29 BOARD
(See page 38.)
IC585
CURRENT PROTECTOR
MIC AMP
W585
MIC 5V
SP-53 BOARD
((See page 112.))
T REEL FG
S REEL FG
CC-7 BOARD
((See page 112.))
SS 5V
FP-118 BOARD
SS 5V
SS 5V
CAPSTAN FG
SS-86 BOARD
((See page 97,107,113.))
TAPE END/TOP SENSOR
SS 5V
IC003
LOADING MOTOR DRIVE
5V
REEL FG LED TAPE END SENS' LED DRIVE
5V
IC001
SERVO/ MECHANISM CONTROL
57
58
4
62
CN006
UNREG
Q001,002
5V REG
5V
IC301
REC/PB AMP
FLYING ERASE OSC
IC002
VOLTAGE ERROR DETECT
FP-134 BOARD
15
RP 5V
VA-40 BOARD
((See page 108.))
15
IC250
ATF SERVO
J361
AV OUT (RF DC OUT)
Q369,370
CURRENT LIMITER
VIDEO
CN360
EVF 5V
CN361
MIC 5V

- Number of page on the board shows circuit diagram.
- (　) mark : refer to this service manual.
- ((　)) mark : refer to CCD-F40/F340 service manual.


BOARD
97,107,113.))
(See page 41.)
SW-93 BOARD
S931
START /STOP
S930
STANDBY
LOCK
J930
REMOTE
FV-3 BOARD
(See page 42.)
S160
POWER
CAMERA
OFF
VTR
W160
FC-19 BOARD
(See page 42.)
IC190
MODE CONTROL
CAM MODE
VTR MODE
CN193
VTR MODE
CAM MODE
LINCS POWER
CAM STBY
CAM REC SW
Q191
SYSTEM CLOCK FREQUENCY SWITCH
CL 2
CL 1
Q166
EVER 5V DETECT
Q164,165
VDD
Q160-163, Q167,168
INITIAL RESET
RESET
Q190
DISPLAY SWITCH
VLC 1
VLC 2
VLC 3
Q192
LITHIUM BATTERY DETECT
LI BATT
CN191
LI 3V
W190
IC001
SERVO/ MECHANISM CONTROL
VDD
EVER 5V
VA REF
Q075
BATTERY LVL
RV001
BATTERY LEVEL
Q071 (1/2)
VTR PWR
CAM PWR
Q079
IC004
DRUM MOTOR DRIVE
IC007
CAPSTAN MOTOR DRIVE
IC006
DRUM FG/PG CAPSTAN FG PULSE SHAPER
DRUM/CAPSTAN PWM POWER DRIVE
UNREG
SS 5V
IC005
EVER 5V REG
W001
CN930
CAM REC
CAM STBY
LINCS POWER
LINCS DC
CN007
VDD
EVER 5V
INNER BUS
Q001,002
5V REG
IC002
VOLTAGE ERROR DETECT
Q070
CURRENT LIMITER
Q071 (1/2), Q080
Q081
Q074
Q073
Q008
DIGITAL TITLE
IC200
IC203
CN005
AF UNREG
SSC 5V
RP 5V
CAM POWER
CG 5V
VTR POWER
SS 5V
BOARD
IC250
ATF SERVO
VIDEO
IC360 - IC362
IC364
IC366
IC369
CHARACTOR GENERATOR
IC367
IC368
IC550
AUDIO
W361
SS 5V
VTR POWER
CAM POWER
VIDEO 5V
EVF 5V
AUDIO 5V
CN936
SS 5V
VIDEO 5V
AUDIO 5V
EVF 5V
VTR POWER
CAM POWER
DC-DC CONVERTER
CN935
UNREG
5V
15V
32V
PA-14 BOARD
(See page 40.)
W990
LI 3V
LITHIUM BATTERY
F990
F991
BATTERY
W991
UNREG

3-7. VIEWFINDER BLOCK DIAGRAM

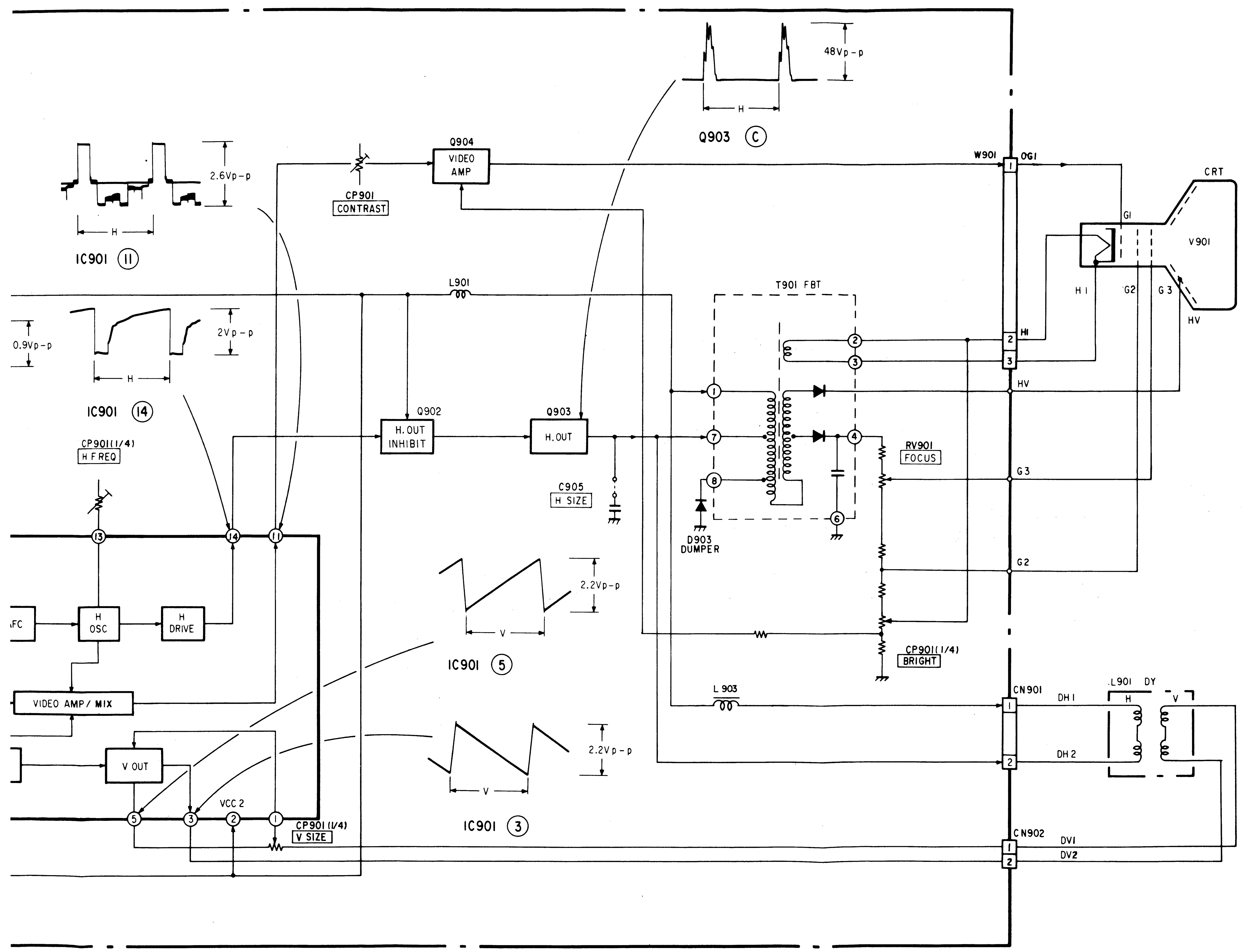


(See page 49.)
D955
TALLY
TL-21 BOARD
D950
TALLY
(See page 49.)
TL-24 BOARD
VF-20BOARD
(See page 49.)
W902
TALLY
W903
EVF5V
W904
POWER
EVF 5V
DIGITAL TITLE
(SS-86)
TALLY
VIDEO
(VA-40)
VIDEO
W904
IC901 ⑨
0.9Vp-p
H
IC901 ⑪
2.6Vp-p
H
IC901 ⑭
2Vp-p
H
CP901(1/4)
H FREQ
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP / MIX
V SYNC SEP
V OSC
V OUT
VCC1
VCC 2
CP901 (1/4)
V SIZE
CP901
CONTRAST
Q904
VIDEO AMP
L901
Q902
H. OUT INHIBIT
Q903
H.OUT
C905
H SIZE
Q903 Ⓒ
48Vp-p
H
T901 FBT
D903
DUMPER
RV9
FOC
IC901 ⑤
2.2Vp-p
V
IC901 ③
2.2Vp-p
V
L 903
CP9
BRIG

- Number of page on the board shows circuit diagram.

( ) mark : refer to this service manual.

(( )) mark : refer to CCD-F40/F340 service manual.


48Vp-p
H
Q903 Ⓒ
2.6Vp-p
H
IC901 ⑪
CP901
CONTRAST
Q904
VIDEO AMP
W901
OG1
1
CRT
G1
V901
H1
G2
G3
HV
L901
T901 FBT
0.9Vp-p
2Vp-p
H
IC901 ⑭
2
3
H1
HV
Q902
H.OUT INHIBIT
Q903
H.OUT
1
7
8
2
3
4
6
RV901
FOCUS
G3
CP901(1/4)
H FREQ
C905
H SIZE
D903
DUMPER
13
14
11
G2
2.2Vp-p
V
AFC
H OSC
H DRIVE
IC901 ⑤
CP901(1/4)
BRIGHT
VIDEO AMP/MIX
L903
CN901
DH1
L901 DY
H
V
1
2.2Vp-p
V OUT
DH2
2
V
VCC 2
5
3
2
1
CP901(1/4)
V SIZE
IC901 ③
CN902
DV1
DV2
1
2

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

4-1. FRAME SCHEMATIC DIAGRAM

NOTE

THIS NOTES IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this,the necessary note is printed in each block.)

• For printed wiring boards.

- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ■ : Pattern of the rear side. *

* Indicated by the color green.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

• For schematic diagram

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms,1/10W unless otherwise noted.
- Chip resistor are 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊞ : nonflammable resistor.
- ⊟ : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- ☐ : adjustment for repair.
- ━━ : B + Line
- ━ ━ ━ : B – Line.
- ⇨ : IN/OUT direction of (+, –) B line.
- ※ : selected to yield optimum performance.
- Circled numbers refer to waveforms.
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

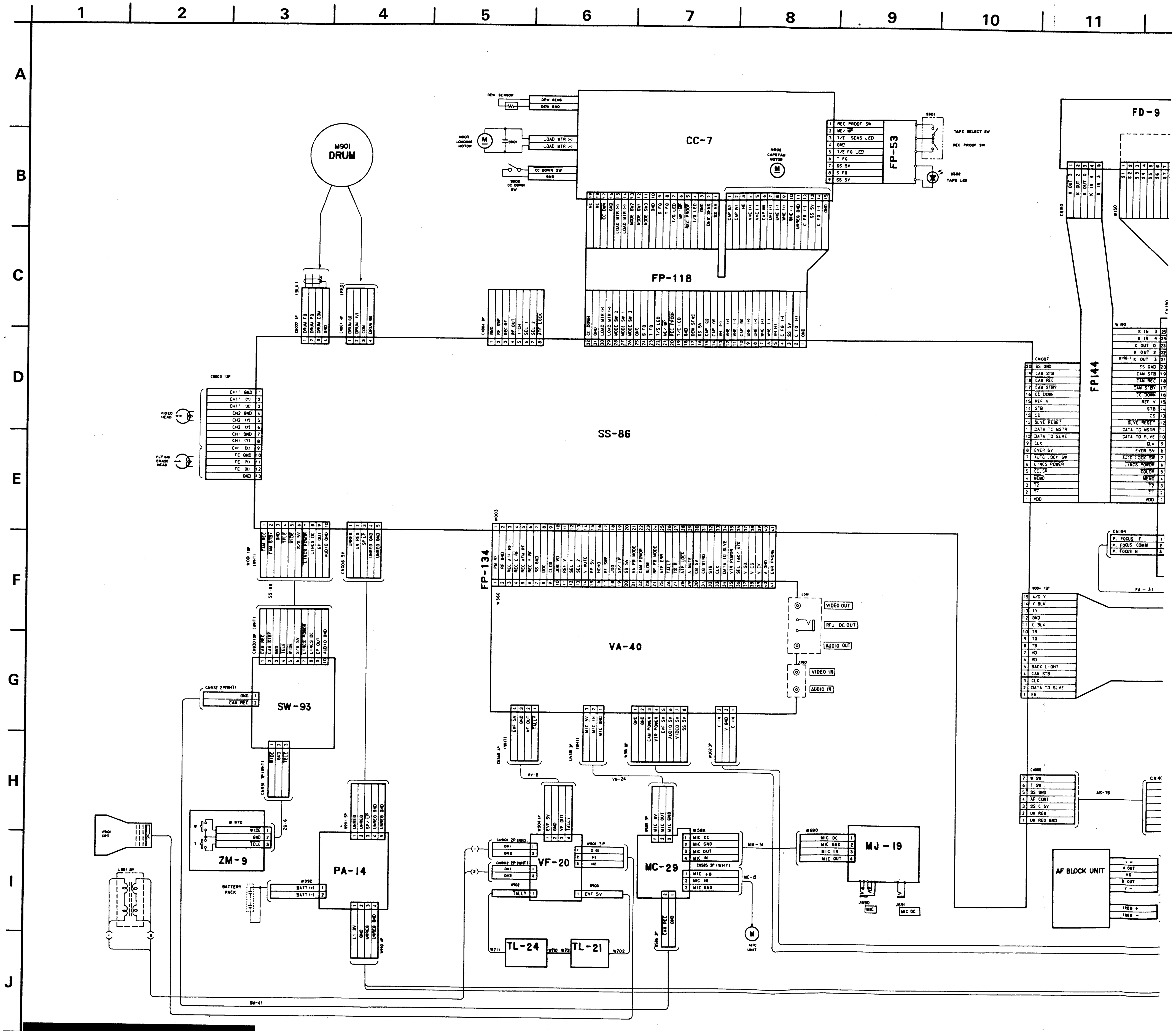
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

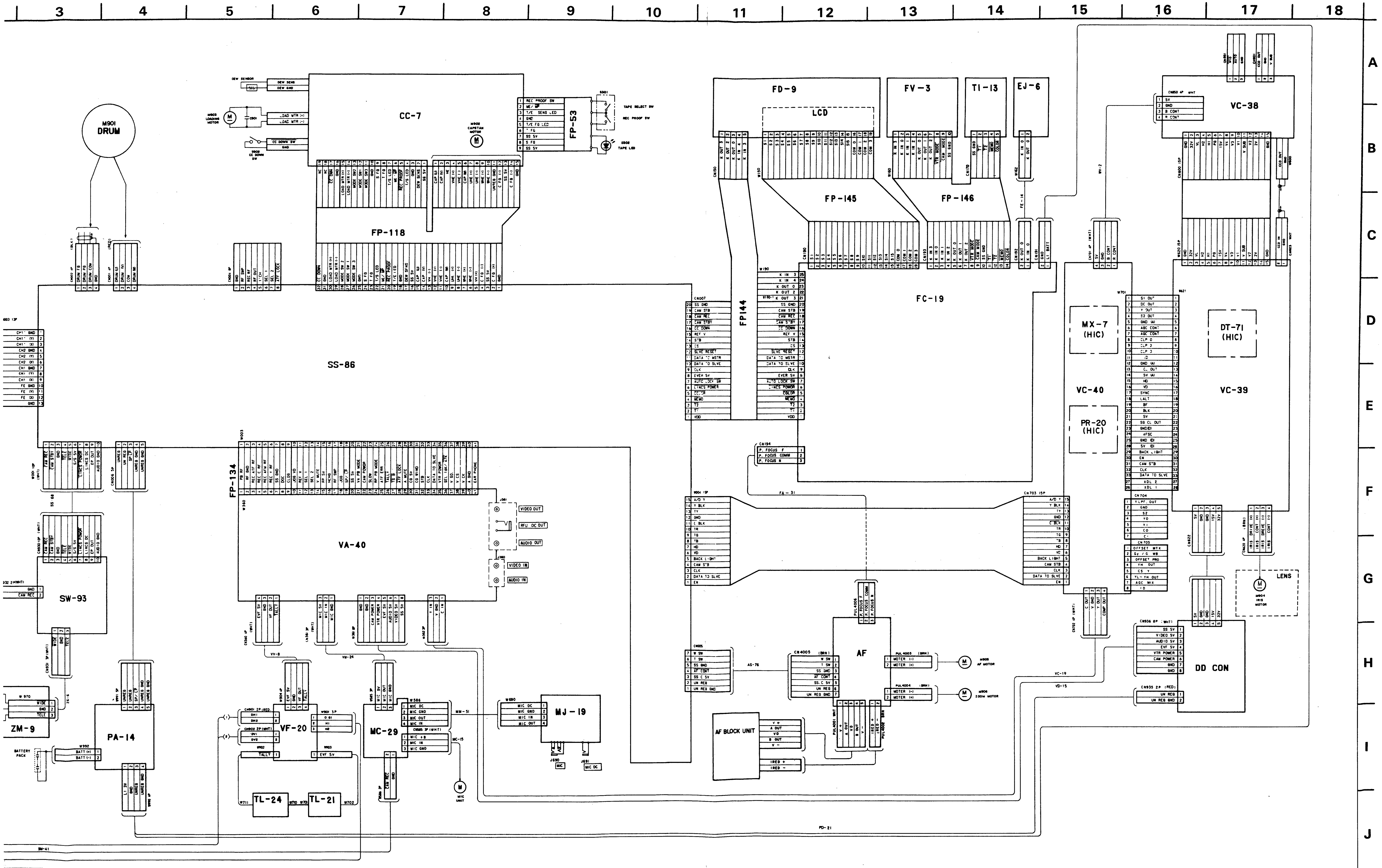
•Number of page on the board shows circuit diagram.

( ) mark : refer to this service manual.

(( )) mark : refer to CCD-F40/F340 service manual.



1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
M901
DRUM
CC-7
FP-53
FP-118
FD-9
FP144
SS-86
FP-134
VA-40
SW-93
ZM-9
PA-14
VF-20
MC-29
MJ-19
TL-24
TL-21
AF BLOCK UNIT
VIDEO OUT
RFU DC OUT
AUDIO OUT
VIDEO IN
AUDIO IN
MIC
MIC DC
BATTERY PACK
VIDEO HEAD
FLYING ERASE HEAD
LOADING MOTOR
CAPSTAN MOTOR
TAPE SELECT SW
REC PROOF SW
TAPE LED
MIC UNIT

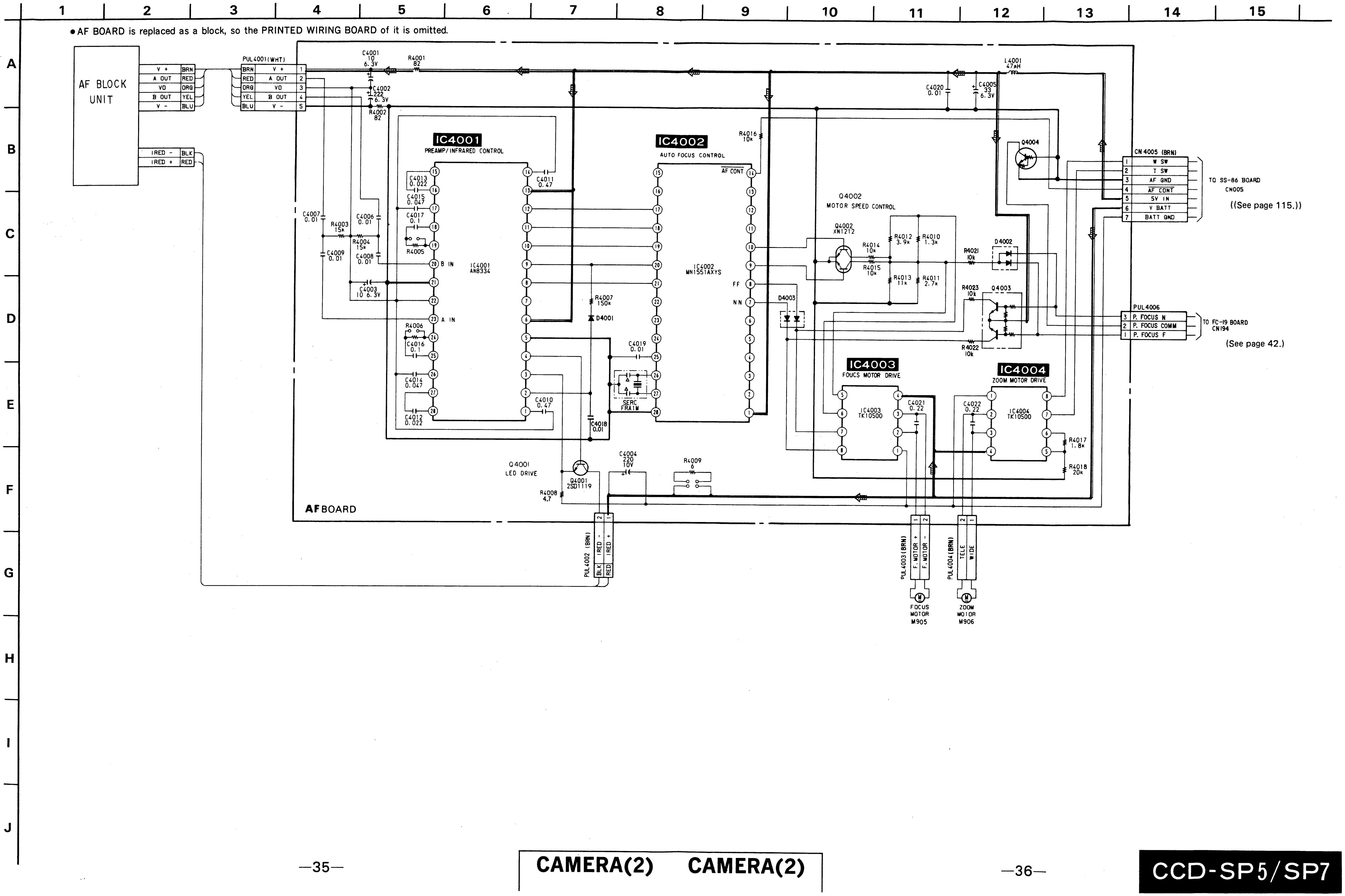

3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
A
B
C
D
E
F
G
H
I
J
M901
DRUM
CC-7
FP-53
FP-118
SS-86
FD-9
LCD
FV-3
TI-13
EJ-6
VC-38
FP-145
FP-146
FC-19
FP144
MX-7
(HIC)
VC-40
PR-20
(HIC)
DT-71
(HIC)
VC-39
FP-134
VA-40
VIDEO OUT
RFU DC OUT
AUDIO OUT
VIDEO IN
AUDIO IN
SW-93
ZM-9
PA-14
VF-20
MC-29
MJ-19
TL-24
TL-21
AF
AF BLOCK UNIT
DD CON
LENS

FRAME FRAME

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

AF (Auto Focus) SCHEMATIC DIAGRAM

- AF BOARD is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.


1
2
3
4
5
6
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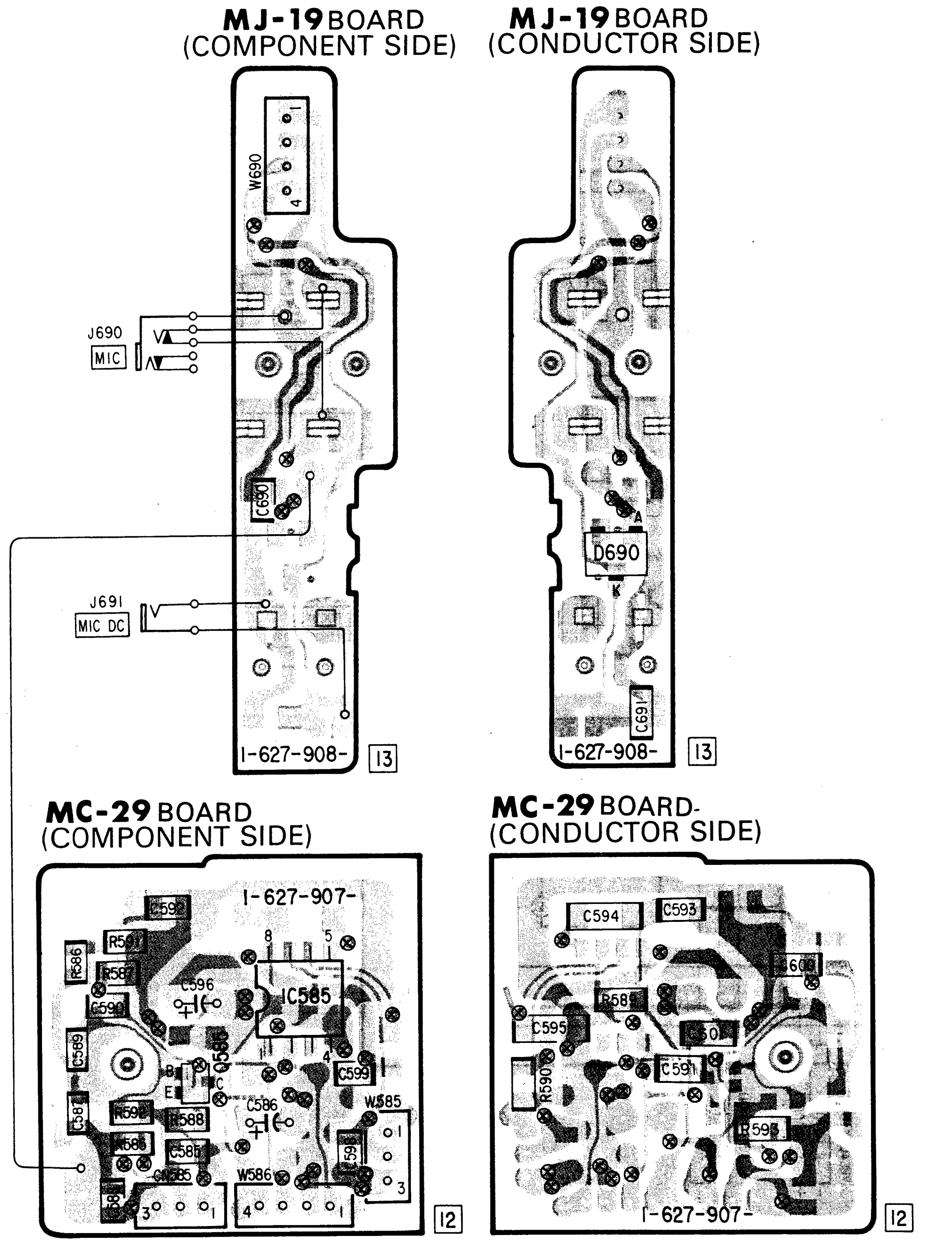
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
AF BLOCK UNIT
V + BRN
A OUT RED
VO ORG
B OUT YEL
V - BLU
IRED - BLK
IRED + RED
PUL4001 (WHT)
C4001 10 6.3V
R4001 82
C4002 222 6.3V
R4002 82
IC4001
PREAMP/INFRARED CONTROL
IC4001 AN8334
B IN
A IN
C4013 0.022
C4015 0.047
C4017 0.1
R4005
C4007 0.01
R4003 15k
C4006 0.01
R4004 15k
C4008 0.01
C4009 0.01
C4003 10 6.3V
R4006
C4016 0.1
C4014 0.047
C4012 0.022
C4011 0.47
C4010 0.47
R4007 150k
D4001
C4018 0.01
C4019 0.01
SERC FRAIM
Q4001 LED DRIVE
Q4001 2SD1119
R4008 4.7
C4004 220 10V
R4009 6
IC4002
AUTO FOCUS CONTROL
IC4002 MN1551AXYS
AF CONT
FF
NN
R4016 10k
D4003
Q4002 MOTOR SPEED CONTROL
Q4002 XN1212
R4014 10k
R4015 10k
R4012 3.9k
R4010 1.3k
R4013 11k
R4011 2.7k
R4021 10k
D4002
R4023 10k
Q4003
R4022 10k
C4020 0.01
C4005 33 6.3V
L4001 47μH
Q4004
IC4003
FOUCS MOTOR DRIVE
IC4003 TK10500
C4021 0.22
IC4004
ZOOM MOTOR DRIVE
IC4004 TK10500
C4022 0.22
R4017 1.8k
R4018 20k
CN4005 (BRN)
1 W SW
2 T SW
3 AF GND
4 AF CONT
5 5V IN
6 V BATT
7 BATT GND
TO SS-86 BOARD CN005
((See page 115.))
PUL4006
3 P. FOCUS N
2 P. FOCUS COMM
1 P. FOCUS F
TO FC-19 BOARD CN194
(See page 42.)
AF BOARD
PUL4002 (BRN)
IRED -
IRED +
BLK
RED
PUL4003 (BRN)
F. MOTOR +
F. MOTOR -
FOCUS MOTOR M905
PUL4004 (BRN)
TELE
WIDE
ZOOM MOTOR M906

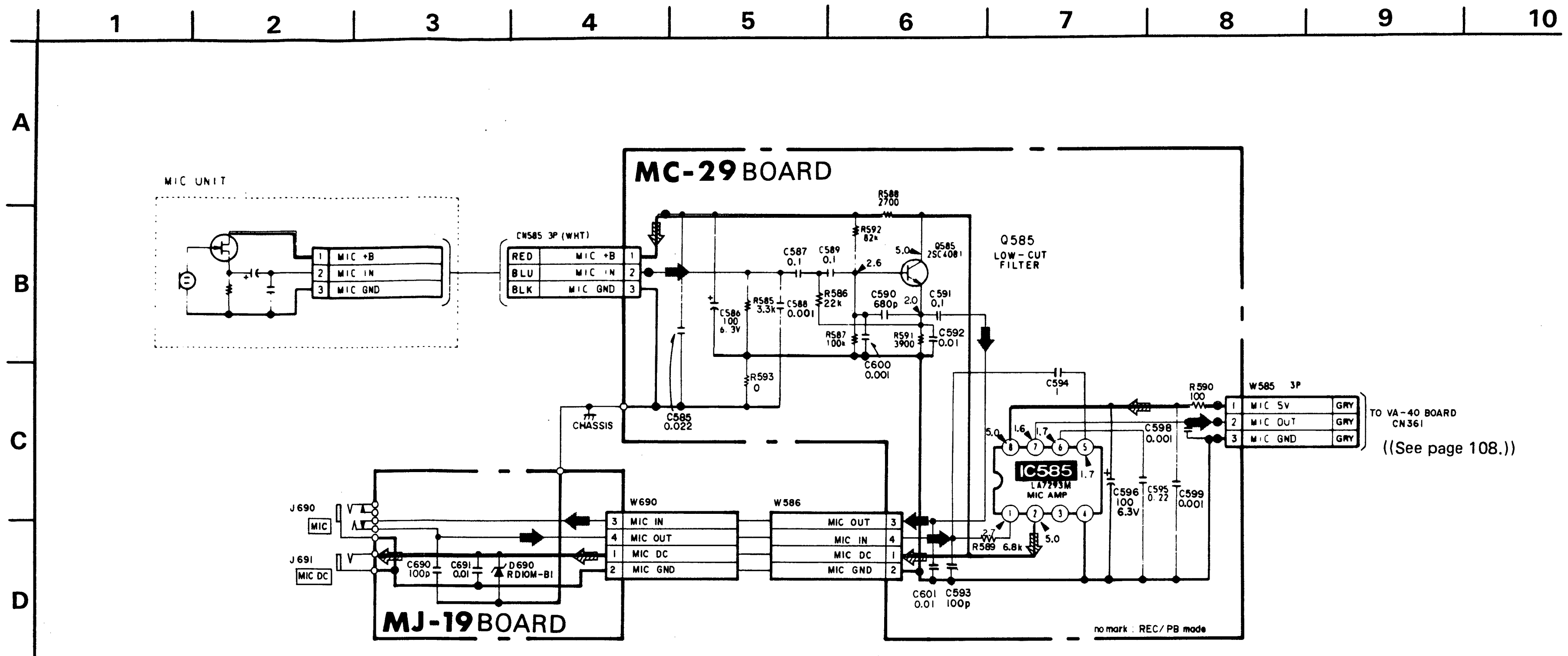
MC-29 (MIC AMP), MJ-19 (EXIT MIC JACK) PRINTED WIRING BOARDS

—Ref. No. MC-29 and MJ-19 BOARDS : 4,000 series—


MJ-19 BOARD (COMPONENT SIDE)
MJ-19 BOARD (CONDUCTOR SIDE)
W690
J690
MIC
J691
MIC DC
C691
D690
C690
1-627-908-
13
MC-29 BOARD (COMPONENT SIDE)
MC-29 BOARD (CONDUCTOR SIDE)
1-627-907-
IC585
C592
R591
R586
R587
C590
C596
C589
C586
C585
C599
W585
W586
R588
C594
C593
C595
C600
R590
C601
C591
12

MC-29 (MIC AMP), MJ-19 (EXIT MIC JACK) SCHEMATIC DIAGRAM

—Ref. No. MC-29 and MJ-19 BOARDS : 4,000 series—


1
2
3
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6
7
8
9
10
A
B
C
D
MC-29 BOARD
MJ-19 BOARD
MIC UNIT
MIC +B
MIC IN
MIC GND
CN585 3P (WHT)
RED
BLU
BLK
R588 2700
R592 82k
C587 0.1
C589 0.1
Q585 2SC4081
Q585 LOW-CUT FILTER
R585 3.3k
C588 0.001
R586 22k
C586 100 6.3V
C590 680p
C591 0.1
R587 100k
R591 3900
C592 0.01
C600 0.001
R593 0
CHASSIS
C585 0.022
C594 1
R590 100
W585 3P
MIC 5V
MIC OUT
MIC GND
GRY
TO VA-40 BOARD CN361
((See page 108.))
C598 0.001
IC585 LA7293M MIC AMP
C596 100 6.3V
C595 0.22
C599 0.001
R589 6.8k
C601 0.01
C593 100p
W690
W586
MIC IN
MIC OUT
MIC DC
MIC GND
J690
MIC
J691
MIC DC
C690 100p
C691 0.01
D690 RD10M-B1
no mark : REC/PB mode

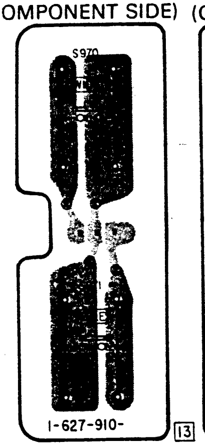
- **Signal path**

➡ : REC AUDIO Signal

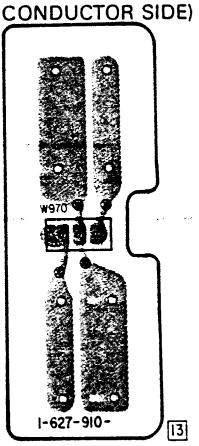
PA-14 (POWER), SW-93 (START/STOP SWITCH, STANDBY SWITCH, IN/OUT JACK), ZM-9 (ZOOM SWITCH) PRINTED WIRING BOARDS

—Ref. No. SW-93 and ZM-9 BOARDS : 5,000 series, PA-14 BOARD : 6,000 series—

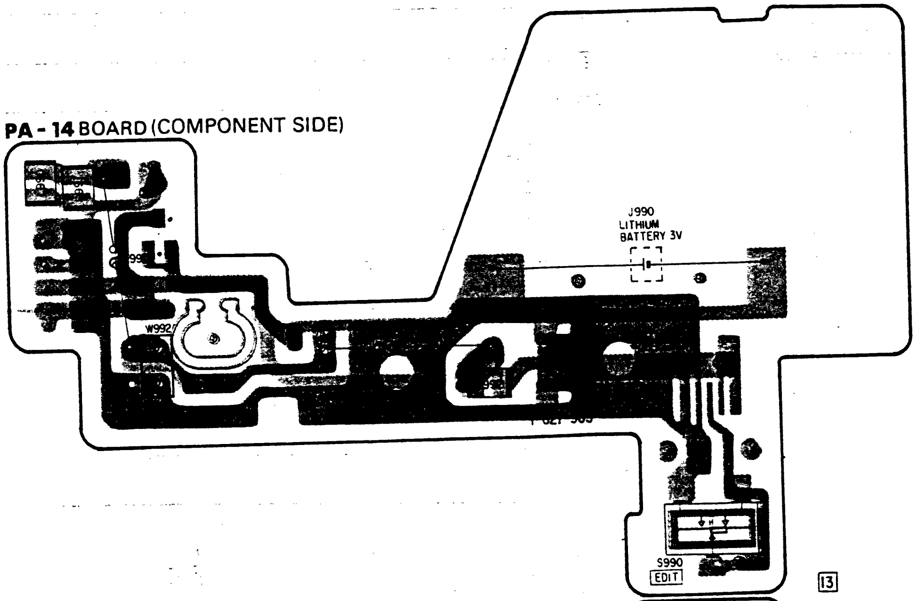
ZM-9 BOARD (COMPONENT SIDE)


S970
1-627-910-
13

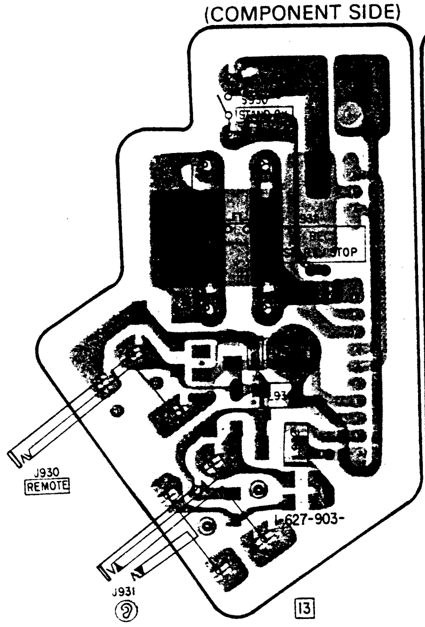
ZM-9 BOARD (CONDUCTOR SIDE)


W970
1-627-910-
13

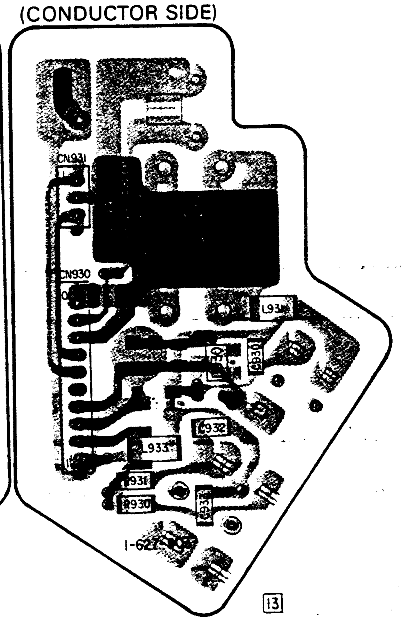
PA-14 BOARD (COMPONENT SIDE)


J990
LITHIUM
BATTERY 3V
W992
S990
EDIT
1-627-905
13

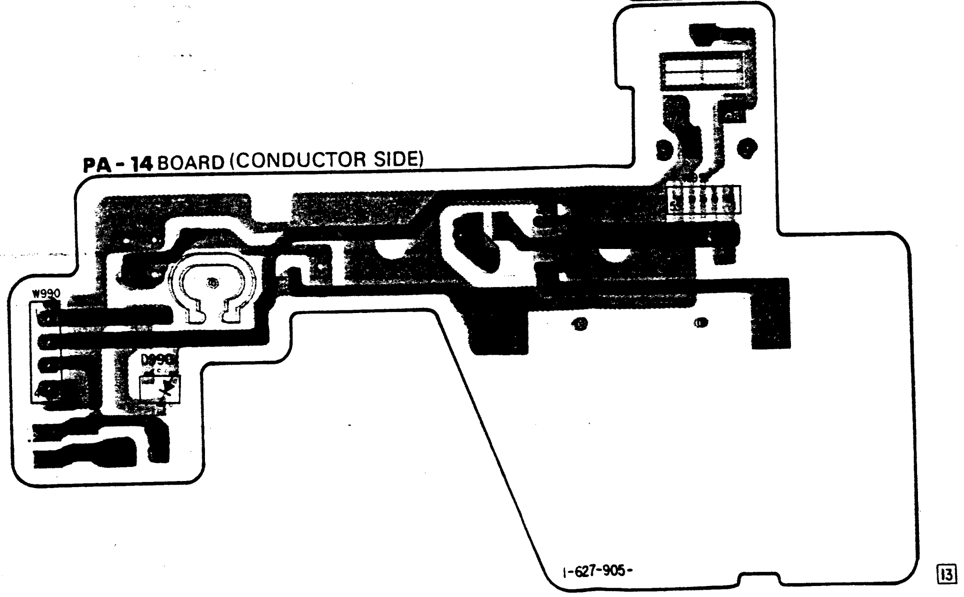
SW-93 BOARD (COMPONENT SIDE)


STAND BY
STOP
J930
REMOTE
J931
1-627-903-
13

SW-93 BOARD (CONDUCTOR SIDE)

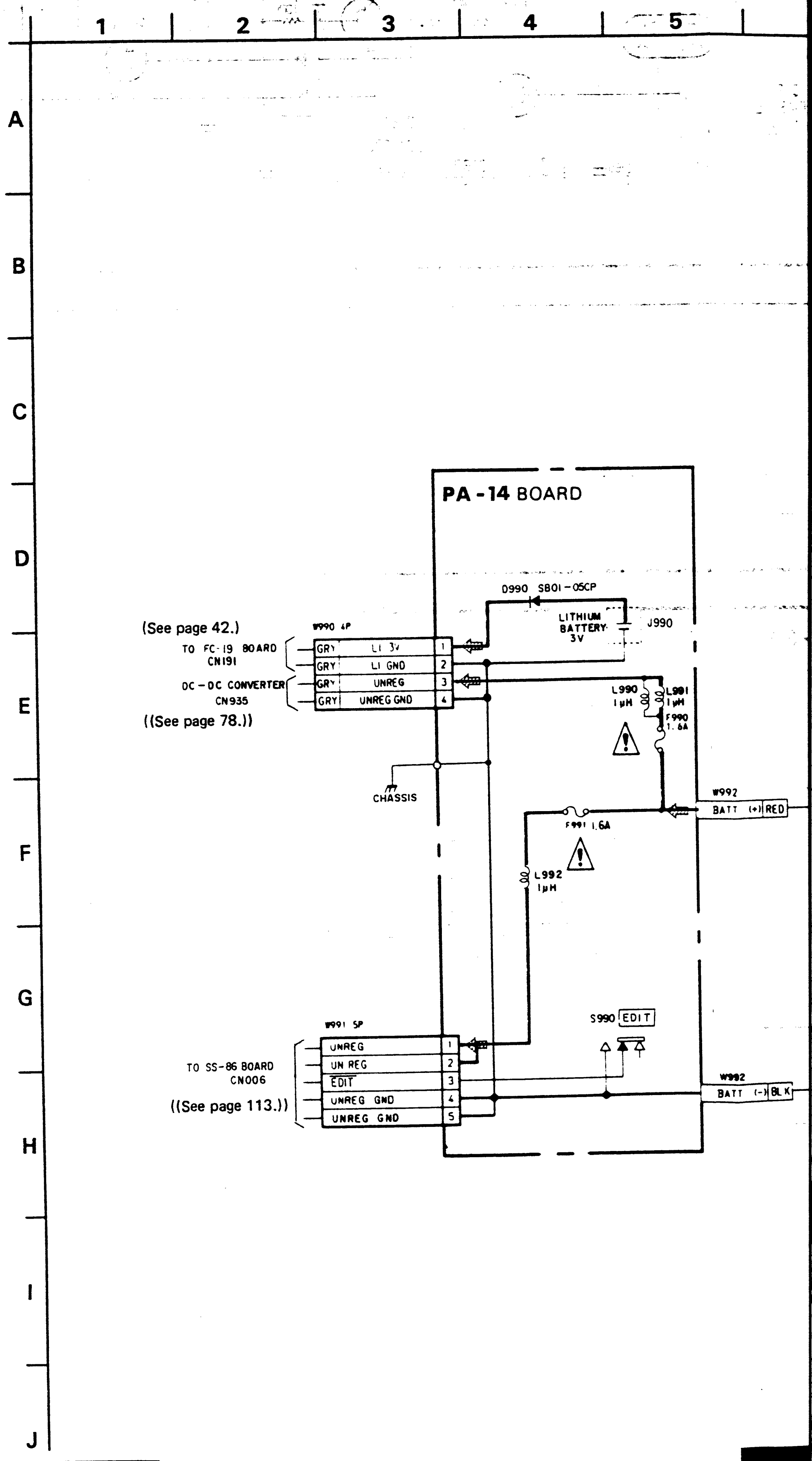

CN931
CN930
L931
L932
L933
S931
S930
1-627
13

PA-14 BOARD (CONDUCTOR SIDE)


W990
D990
1-627-905-
13

PA-14 (POWER), SW-93 (START/STOP SWITCH, STANDBY SWITCH, IN/OUT JACK), Z

—Ref. No. SW-93 and ZM-9 BOARDS : 5,000 series, PA-14 BOARD : 6,000 series—


1
2
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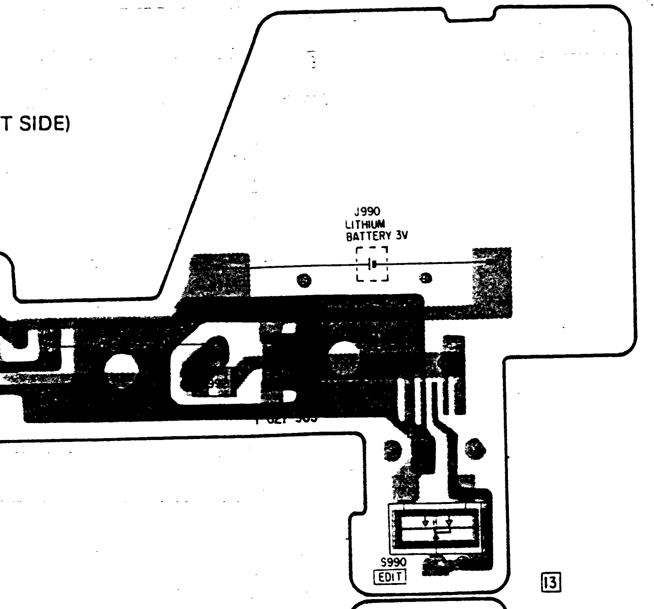
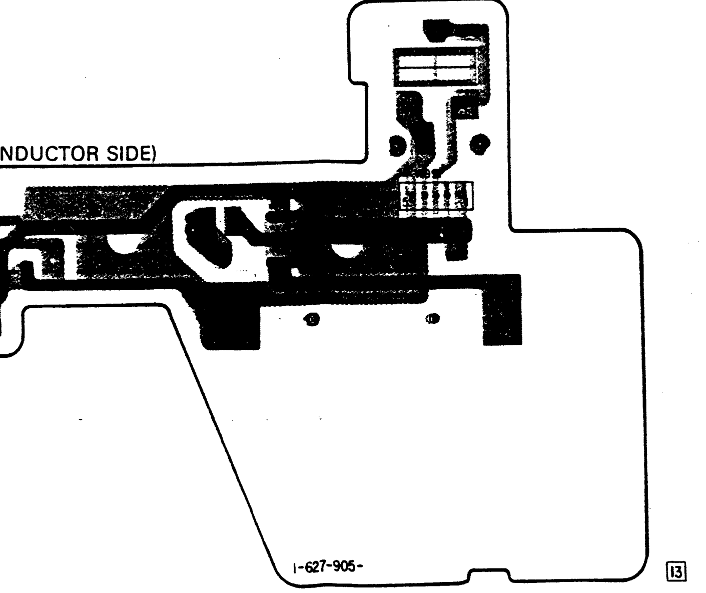
4
5
A
B
C
D
E
F
G
H
I
J
PA-14 BOARD
D990 SB01-05CP
LITHIUM BATTERY 3V
J990
(See page 42.)
TO FC-19 BOARD CN191
DC-DC CONVERTER CN935
((See page 78.))
W990 4P
GRY
LI 3V
LI GND
UNREG
UNREG GND
1
2
3
4
L990 1μH
L991 1μH
F990 1.6A
CHASSIS
W992
BATT (+) RED
F991 1.6A
L992 1μH
S990 EDIT
W991 5P
TO SS-86 BOARD CN006
((See page 113.))
UNREG
UN REG
EDIT
UNREG GND
UNREG GND
1
2
3
4
5
W992
BATT (-) BLK

M-9 (ZOOM SWITCH) PRINTED WIRING BOARDS

T SIDE)

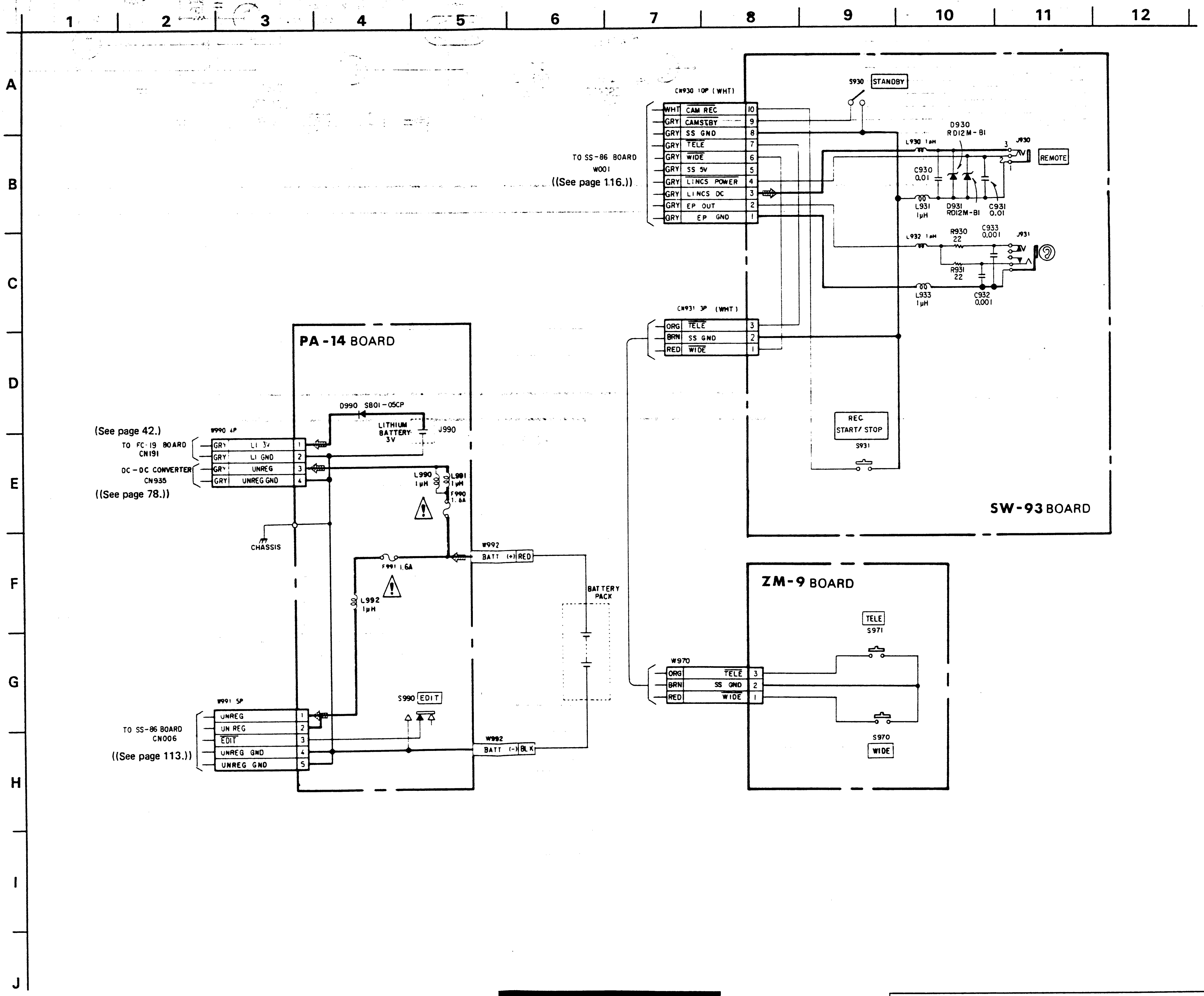

J990
LITHIUM
BATTERY 3V
1-627-905
S990
EDIT
13

NDUCTOR SIDE)



PA-14 (POWER), SW-93 (START/STOP SWITCH, STANDBY SWITCH, IN/OUT JACK), ZM-9 (ZOOM SWITCH) SCHEMATIC DIAGRAM

—Ref. No. SW-93 and ZM-9 BOARDS: 5,000 series, PA-14 BOARD: 6,000 series—


1
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9
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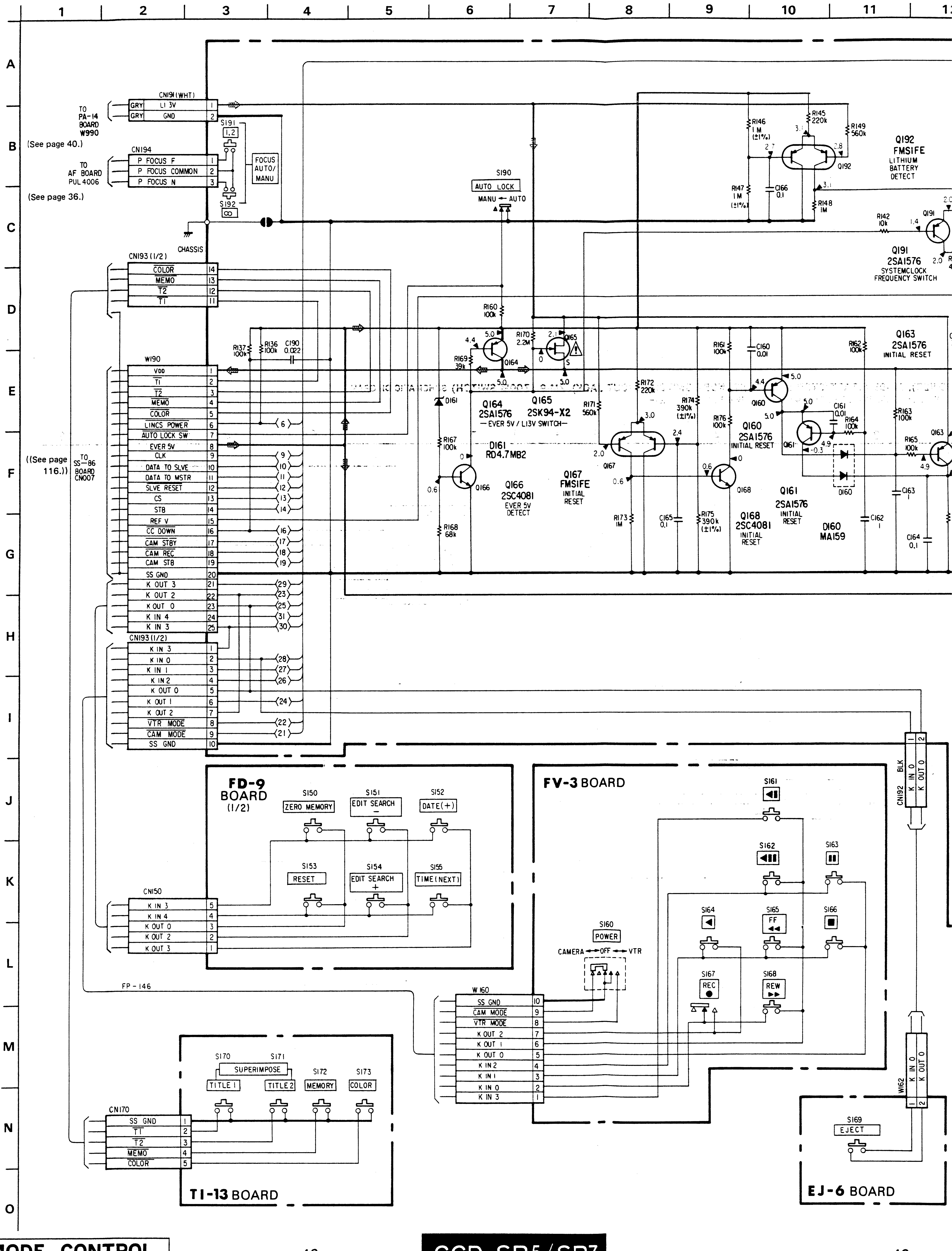
11
12
A
B
C
D
E
F
G
H
I
J
CN930 10P (WHT)
WHT CAM REC 10
GRY CAMSTBY 9
GRY SS GND 8
GRY TELE 7
GRY WIDE 6
GRY SS 5V 5
GRY LINCS POWER 4
GRY LINCS DC 3
GRY EP OUT 2
GRY EP GND 1
TO SS-86 BOARD
W001
((See page 1.16.))
S930 STANDBY
D930
RD12M-B1
L930 1μH
J930
REMOTE
C930
0.01
L931
1μH
D931
RD12M-B1
C931
0.01
L932 1μH
R930
22
C933
0.001
J931
R931
22
L933
1μH
C932
0.001
CN931 3P (WHT)
ORG TELE 3
BRN SS GND 2
RED WIDE 1
REC
START/ STOP
S931
SW-93 BOARD
PA-14 BOARD
D990 S801-05CP
LITHIUM
BATTERY
3V
J990
(See page 42.)
W990 4P
TO FC-19 BOARD
CN191
GRY LI 3V 1
GRY LI GND 2
GRY UNREG 3
GRY UNREG GND 4
DC-DC CONVERTER
CN935
((See page 78.))
L990
1μH
L991
1μH
F990
1.6A
CHASSIS
W992
BATT (+) RED
F991 1.6A
L992
1μH
BATTERY
PACK
W991 5P
UNREG 1
UN REG 2
EDIT 3
UNREG GND 4
UNREG GND 5
TO SS-86 BOARD
CN006
((See page 113.))
S990 EDIT
W992
BATT (-) BLK
ZM-9 BOARD
TELE
S971
W970
ORG TELE 3
BRN SS GND 2
RED WIDE 1
S970
WIDE

FC-19 (MODE CONTROL), FV-3 (POWER SWITCH, VTR FUNCTION SWITCH), FD-9 (CAMERA FUNCTION SWITCH), EJ-6 (EJECT SWITCH), TI-13 (DIGITAL TITLER SWITCH) SCHEMATIC

—Ref. No. FC-19, FV-3, FD-9, EJ-6 and TI-13 BOARDS : 4,000 series—


1
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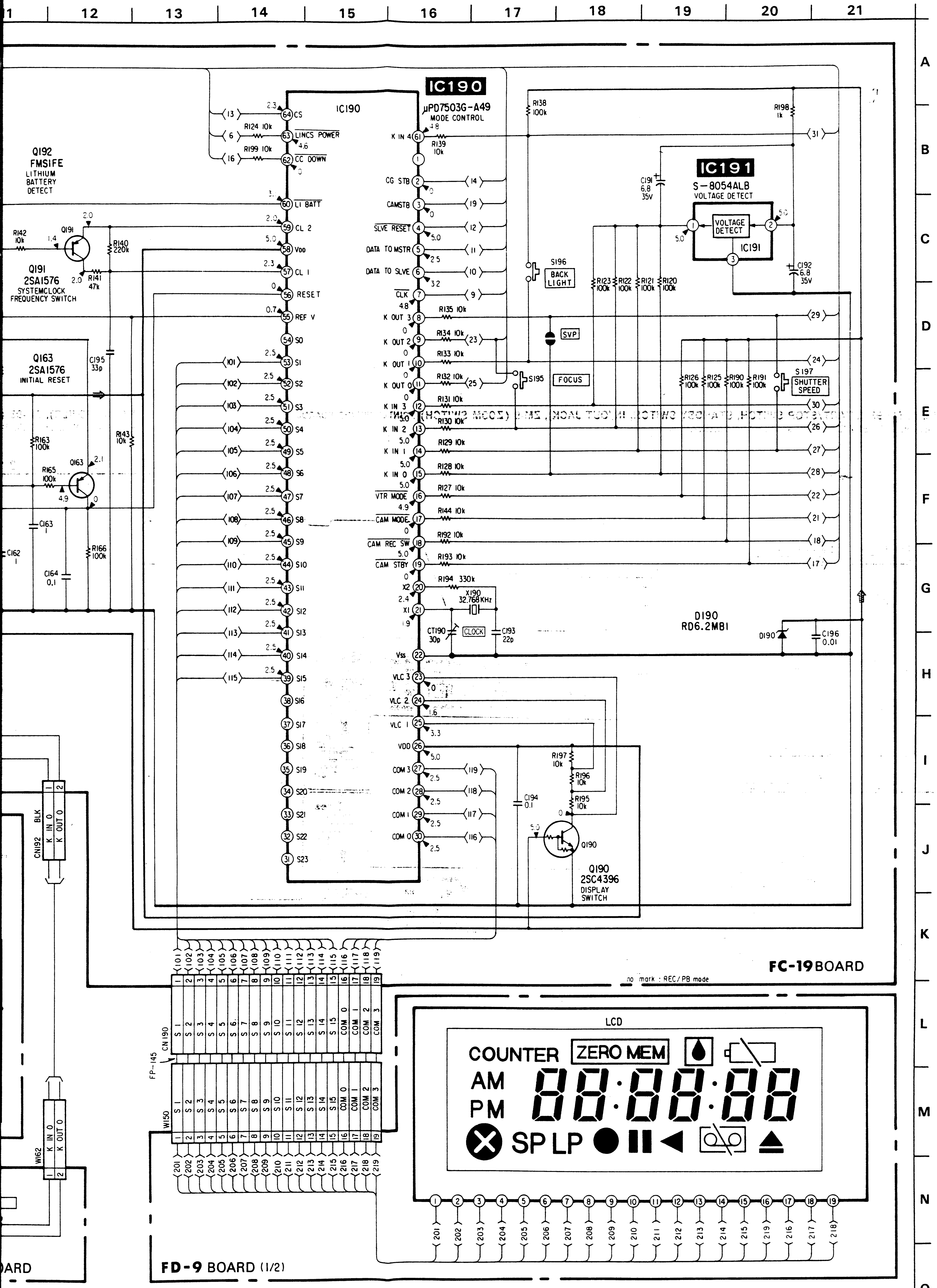
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
TO PA-14 BOARD W990
(See page 40.)
CN191 (WHT)
GRY LI 3V
GRY GND
CN194
P FOCUS F
P FOCUS COMMON
P FOCUS N
TO AF BOARD PUL 4006
(See page 36.)
S191 1,2
S192 ∞
FOCUS AUTO/MANU
CHASSIS
CN193 (1/2)
COLOR
MEMO
T2
T1
W190
VDD
T1
T2
MEMO
COLOR
LINCS POWER
AUTO LOCK SW
EVER 5V
CLK
DATA TO SLVE
DATA TO MSTR
SLVE RESET
CS
STB
REF V
CC DOWN
CAM STBY
CAM REC
CAM STB
SS GND
K OUT 3
K OUT 2
K OUT 0
K IN 4
K IN 3
((See page 116.))
TO SS-86 BOARD CN007
CN193 (1/2)
K IN 3
K IN 0
K IN 1
K IN 2
K OUT 0
K OUT 1
K OUT 2
VTR MODE
CAM MODE
SS GND
S190
AUTO LOCK
MANU ← AUTO
R137 100k
R136 100k
C190 0.022
R160 100k
R169 39k
R170 2.2M
Q164 2SA1576
Q165 2SK94-X2
— EVER 5V / LI3V SWITCH—
D161
D161 RD4.7MB2
R167 100k
R168 68k
Q166 2SC4081 EVER 5V DETECT
Q167 FMSIFE INITIAL RESET
R171 560k
R172 220k
R173 1M
R174 390k (±1%)
C165 0.1
R175 390k (±1%)
R161 100k
C160 0.01
R176 100k
Q160 2SA1576 INITIAL RESET
Q168 2SC4081 INITIAL RESET
Q161 2SA1576 INITIAL RESET
C161 0.01
R164 100k
D160 MA159
R162 100k
C162 1
Q163 2SA1576 INITIAL RESET
R163 100k
R165 100k
C163 1
C164 0.1
R146 1M (±1%)
R145 220k
R149 560k
Q192
R147 1M (±1%)
C166 0.1
R148 1M
Q192 FMSIFE LITHIUM BATTERY DETECT
R142 10k
Q191
Q191 2SA1576 SYSTEMCLOCK FREQUENCY SWITCH
CN192 BLK
K IN 0
K OUT 0
FD-9 BOARD (1/2)
S150 ZERO MEMORY
S151 EDIT SEARCH −
S152 DATE(+)
S153 RESET
S154 EDIT SEARCH +
S155 TIME(NEXT)
CN150
K IN 3
K IN 4
K OUT 0
K OUT 2
K OUT 3
FV-3 BOARD
S161
S162
S163
S164
S165 FF
S166
S167 REC
S168 REW
S160 POWER
CAMERA ← OFF → VTR
W160
SS GND
CAM MODE
VTR MODE
K OUT 2
K OUT 1
K OUT 0
K IN 2
K IN 1
K IN 0
K IN 3
FP-146
W162
K IN 0
K OUT 0
S169 EJECT
EJ-6 BOARD
S170
S171
SUPERIMPOSE
TITLE 1
TITLE 2
S172 MEMORY
S173 COLOR
CN170
SS GND
T1
T2
MEMO
COLOR
TI-13 BOARD


1
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13
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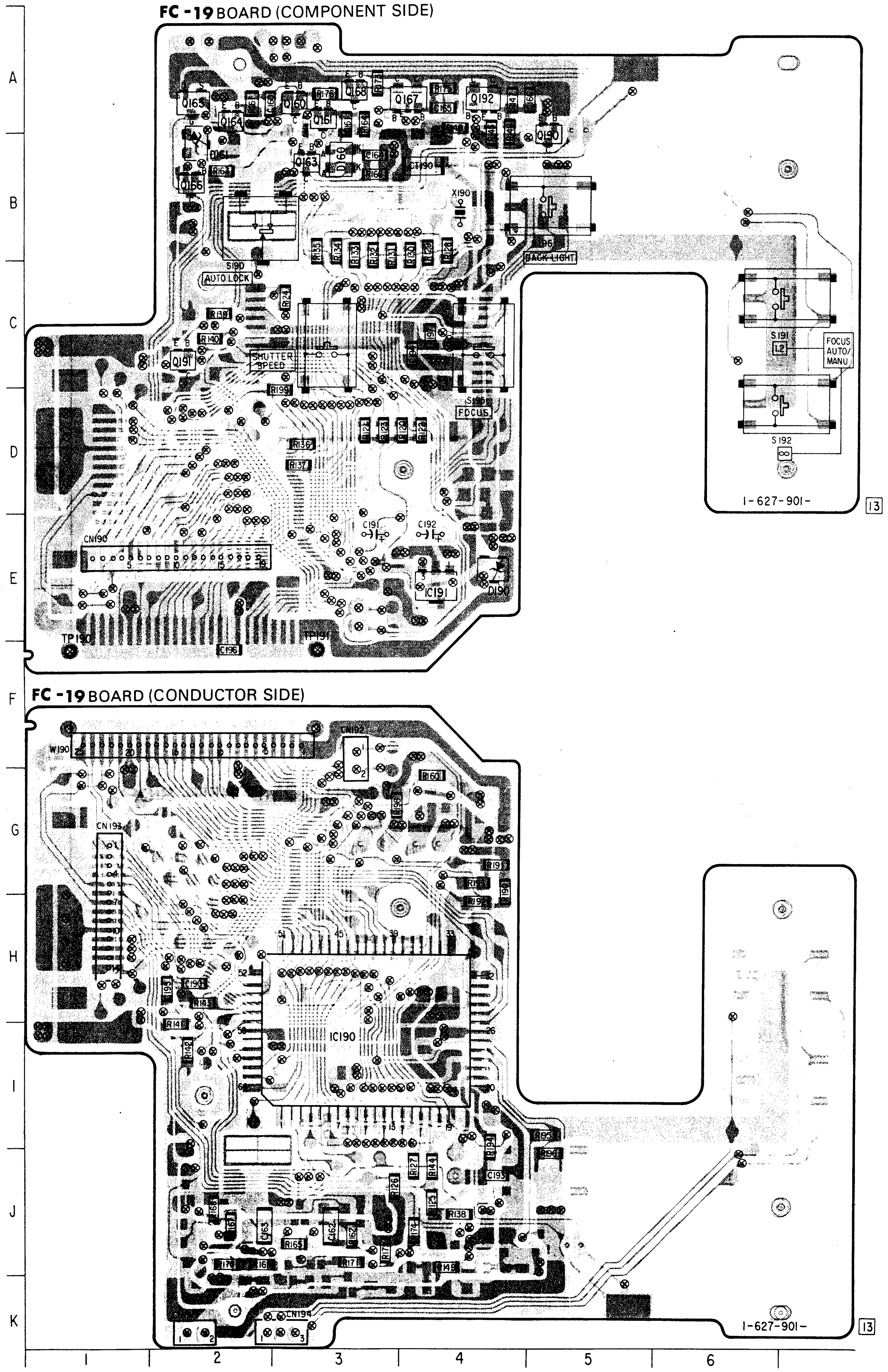
16
17
18
19
20
21
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
IC190
µPD7503G-A49
MODE CONTROL
IC191
S-8054ALB
VOLTAGE DETECT
VOLTAGE DETECT
Q192
FMS1FE
LITHIUM BATTERY DETECT
Q191
2SA1576
SYSTEMCLOCK FREQUENCY SWITCH
Q163
2SA1576
INITIAL RESET
Q190
2SC4396
DISPLAY SWITCH
D190
RD6.2MB1
X190
32.768KHz
CLOCK
S196
BACK LIGHT
S195
FOCUS
SVP
S197
SHUTTER SPEED
CS
LINCS POWER
CC DOWN
LI BATT
CL 2
VDD
CL 1
RESET
REF V
S0
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
K IN 4
CG STB
CAMSTB
SLVE RESET
DATA TO MSTR
DATA TO SLVE
CLK
K OUT 3
K OUT 2
K OUT 1
K OUT 0
K IN 3
K IN 2
K IN 1
K IN 0
VTR MODE
CAM MODE
CAM REC SW
CAM STBY
X2
X1
Vss
VLC 3
VLC 2
VLC 1
VDD
COM 3
COM 2
COM 1
COM 0
CN192
BLK
K IN 0
K OUT 0
W162
CN190
FP-145
W150
FC-19 BOARD
no mark : REC/PB mode
FD-9 BOARD (1/2)
ARD
LCD
COUNTER
ZERO MEM
AM
PM
88:88:88
SP LP

MODE CONTROL MODE CONTROL

FC-19 (MODE CONTROL), FV-3 (POWER SWITCH, VTR FUNCTION SWITCH), FD-9 (CAMERA FUNCTION SWITCH), EJ-6 (EJECT SWITCH), TI-13 (DIGITAL TITLER SWITCH) PRINTED WIRING BOARDS

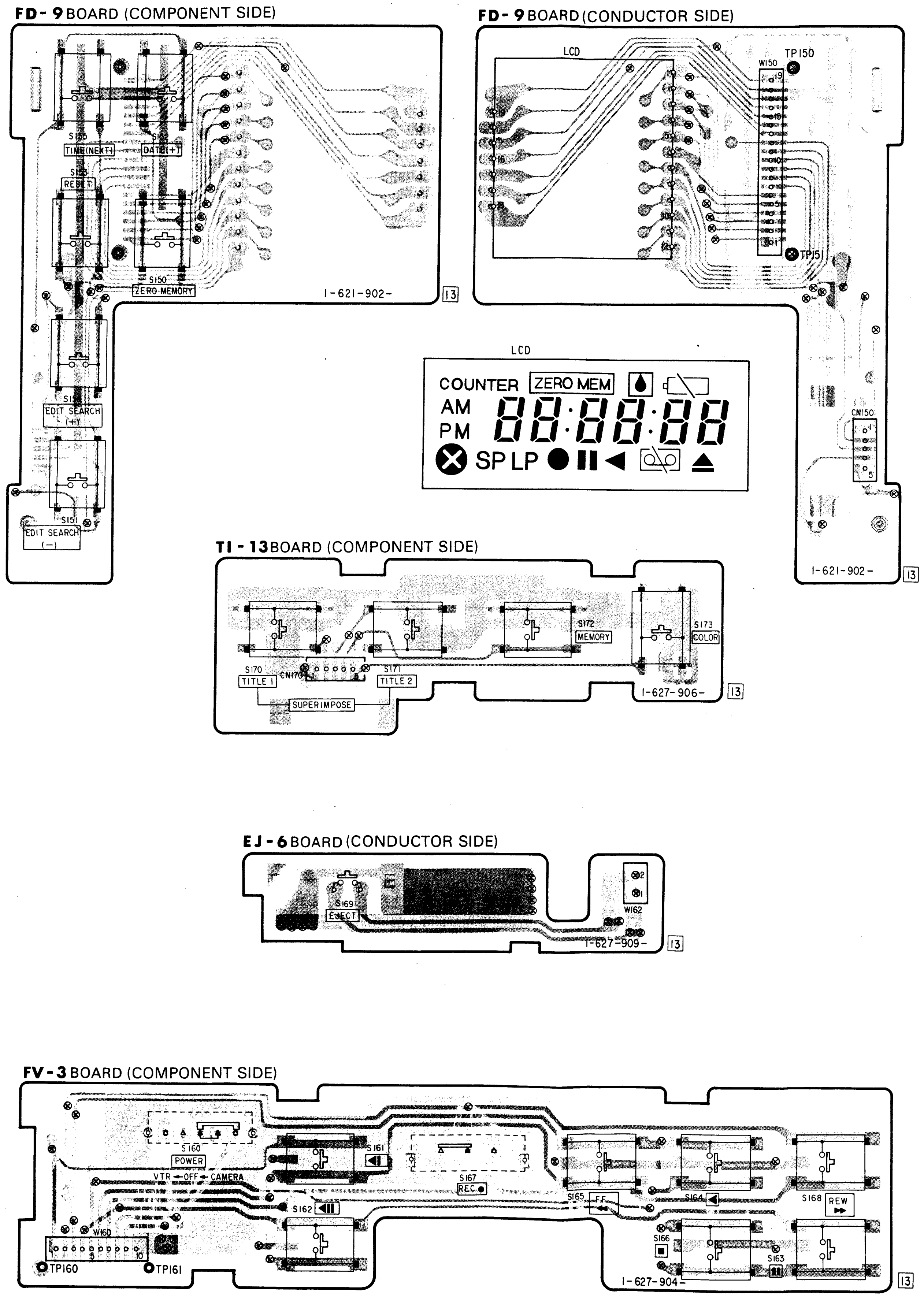
—Ref. No. FC-19, FV-3, FD-9, EJ-6 and TI-13 BOARDS: 4,000 series—

CN190	E·1
CN191	K·2
CN192	F·3
CN193	G·1
CN194	K·3
CT190	B·4
D160	B·3
D161	A·2
D190	E·4
IC190	H·3
IC191	E·4
Q160	A·3
Q161	A·3
Q163	B·3
Q164	A·2
Q165	A·2
Q166	B·2
Q167	A·4
Q168	A·3
Q190	A·5
Q191	C·2
Q192	A·4
TP190	E·1
TP191	E·3
W190	F·1


FC-19 BOARD (COMPONENT SIDE)

FC-19 BOARD (CONDUCTOR SIDE)

A
B
C
D
E
F
G
H
I
J
K
1
2
3
4
5
6
Q165
Q164
Q160
Q161
Q168
Q167
Q192
Q190
Q163
Q166
CT190
X190
S190
AUTO LOCK
BACK LIGHT
SHUTTER SPEED
Q191
S191
L2
FOCUS AUTO/ MANU
S192
S193
FOCUS
C191
C192
CN190
IC191
D190
TP190
TP191
1-627-901-
13
W190
CN192
CN193
IC190
CN194
CN191
1-627-901-
13


FD-9 BOARD (COMPONENT SIDE)

FD-9 BOARD (CONDUCTOR SIDE)

TI-13 BOARD (COMPONENT SIDE)

EJ-6 BOARD (CONDUCTOR SIDE)

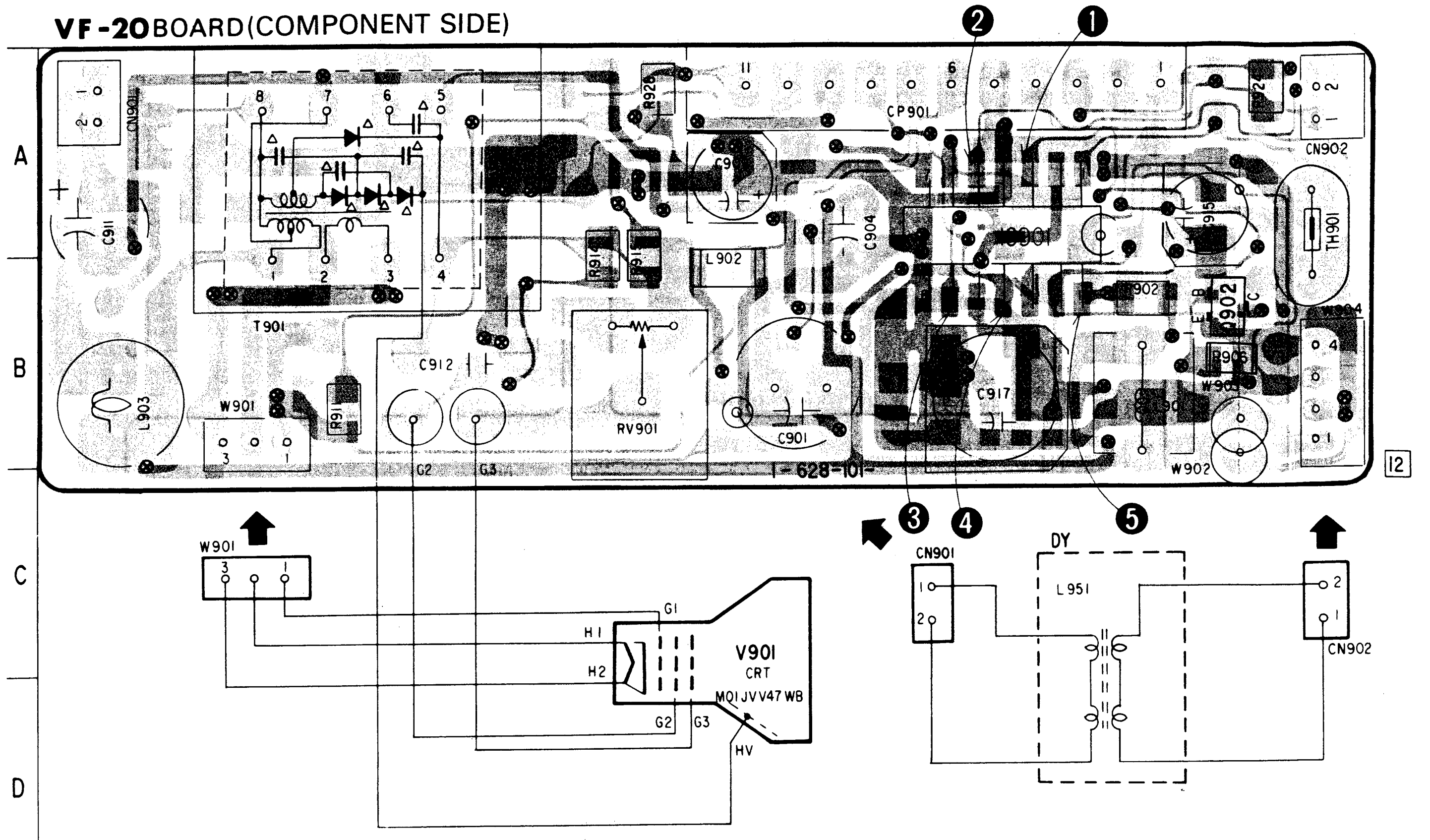
FV-3 BOARD (COMPONENT SIDE)

S156
TIME(NEXT)
S152
DATE(+)
S155
RESET
S150
ZERO MEMORY
EDIT SEARCH (+)
S151
EDIT SEARCH (−)
1-621-902-
13
LCD
TP150
W150
TP151
CN150
1-621-902-
13
LCD
COUNTER
ZERO MEM
AM
PM
88:88:88
SP LP
S170
TITLE 1
CN170
S171
TITLE 2
SUPERIMPOSE
S172
MEMORY
S173
COLOR
1-627-906-
13
S169
EJECT
W162
1-627-909-
13
S160
POWER
VTR ← OFF → CAMERA
S161
S162
S167
REC
S165
FF
S164
S168
REW
S166
S163
W160
TP160
TP161
1-627-904-
13

VF-20 (VIEWFINDER), TL-21 (LED), TL-24 (LED) PRINTED WIRING BOARDS

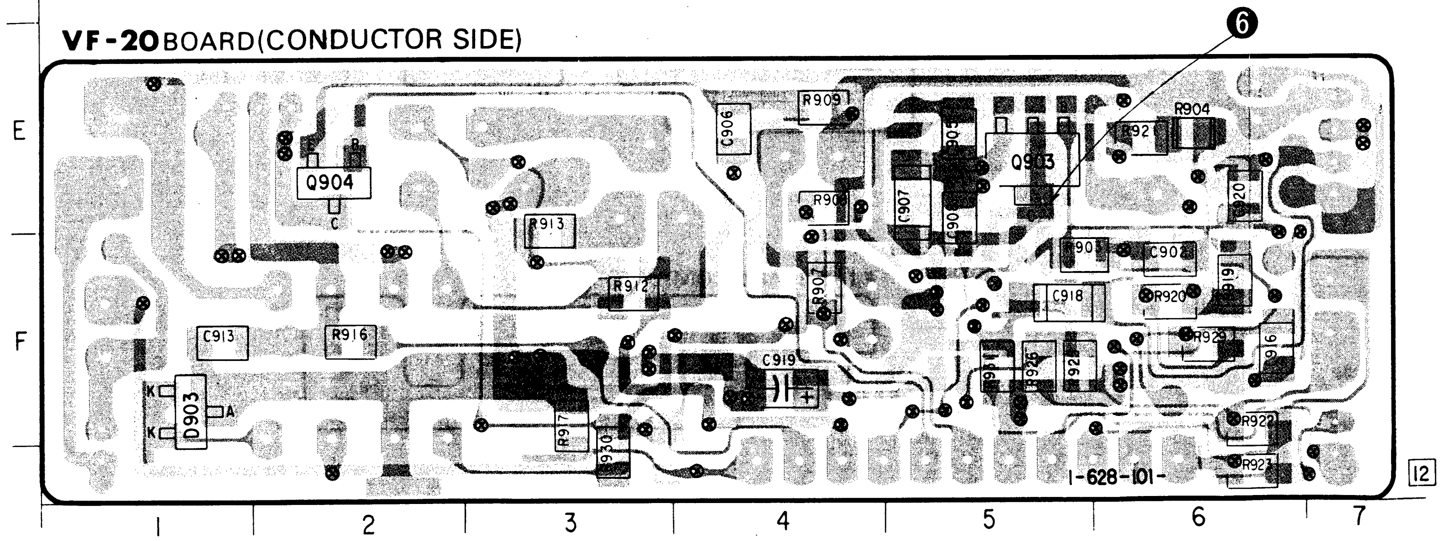
—Ref. No. VF-20, TL-21 and TL-24 BOARDS : 5,000 series—

VF-20 BOARD(COMPONENT SIDE)



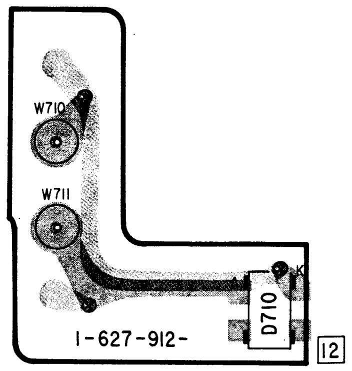
A
B
C
D
❶
❷
❸
❹
❺
CN901
CN902
CP901
C911
C912
C901
C904
C917
T901
L902
L903
IC901
Q902
R914
R926
RV901
TH901
W901
W902
G2
G3
1-628-101-
12
CN901
DY
L951
CN902
W901
V901
CRT
M01JVV47WB
H1
H2
G1
G2
G3
HV

VF-20 BOARD(CONDUCTOR SIDE)



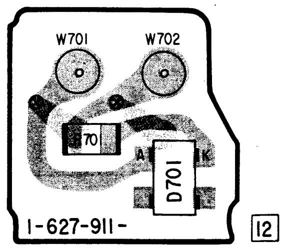
❻
E
F
Q904
Q903
D903
C906
C907
C913
C918
C919
R909
R904
R912
R913
R916
R917
R920
R922
R923
1-628-101-
12
1
2
3
4
5
6
7

TL-24 BOARD(COMPONENT SIDE)



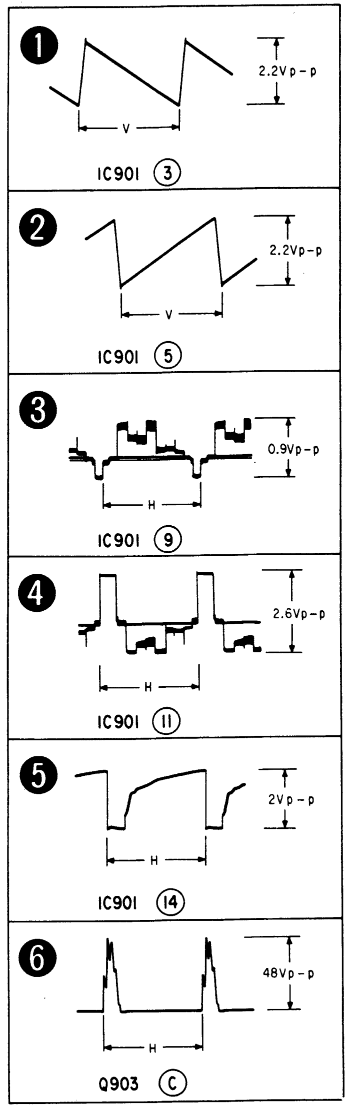
W710
W711
D710
K
1-627-912-
12

TL-21 BOARD (COMPONENT SIDE)



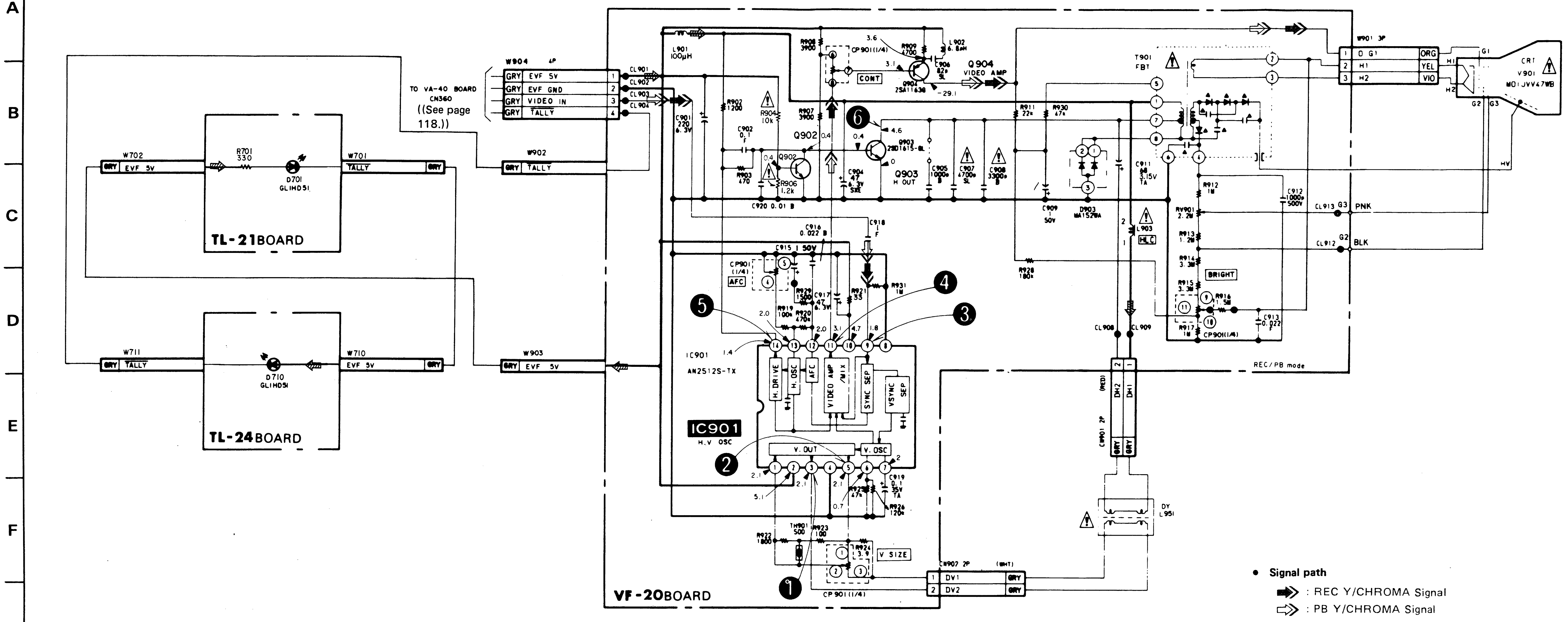
W701
W702
D701
A
K
1-627-911-
12

VF-20 BOARD



VF-20 (VIEWFINDER), TL-21 (LED), TL-24 (LED) SCHEMATIC DIAGRAM

—Ref. No. VF-20, TL-21 and TL-24 BOARDS : 5,000 series—

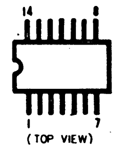


TL-21 BOARD
TL-24 BOARD
VF-20 BOARD
W702 EVF 5V
R701 330
D701 GL1HD51
W701 TALLY
W711 TALLY
D710 GL1HD51
W710 EVF 5V
W904 4P
GRY EVF 5V
GRY EVF GND
GRY VIDEO IN
GRY TALLY
TO VA-40 BOARD CN360
(See page 118.)
W902 TALLY
W903 EVF 5V
L901 100μH
Q902
Q903 2SD1615-BL H OUT
Q904 2SA1163 VIDEO AMP
CONT
AFC
IC901 AN2512S-TX
IC901 H.V OSC
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
V SIZE
T901 FBT
L903 HLC
BRIGHT
D903 MA152WA
CN901 2P
DH2
DH1
CN907 2P
DV1
DV2
DY L951
W901 3P
G1
H1
H2
ORG
YEL
VIO
CRT V901 M01JVV47WB
G2
G3
HV
CL913 G3 PNK
CL912 G2 BLK
REC/PB mode
CP901(1/4)

- Signal path
  - ➡ : REC Y/CHROMA Signal
  - ⇨ : PB Y/CHROMA Signal

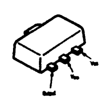
4-3. SEMICONDUCTORS

AN2512S

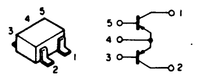


14
8
1
7
(TOP VIEW)

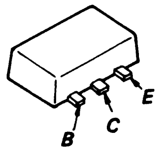
S-8054ALB-LM-S



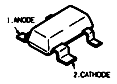
FMS1FE



2SD1615

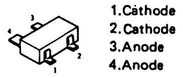


GL-1HD51



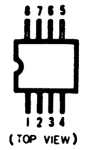
1.ANODE
2.CATHODE

MA159



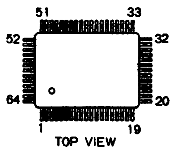
1.Cathode
2.Cathode
3.Anode
4.Anode

LA7293M



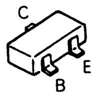
8 7 6 5
1 2 3 4
(TOP VIEW)

μPD7503G-A49

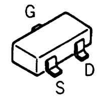


51
33
52
32
64
20
1
19
TOP VIEW

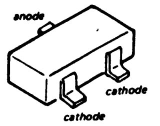
2SA1163
2SA1576
2SC4081-R
2SC4396
2SD1819A-Q



2SK94-X2

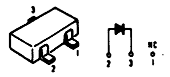


MA152WA



anode
cathode
cathode

RD10M-B2
RD12M-B1
RD4.7M-B2
RD6.2M-B1



SECTION 5
EXPLODED VIEWS

NOTE:

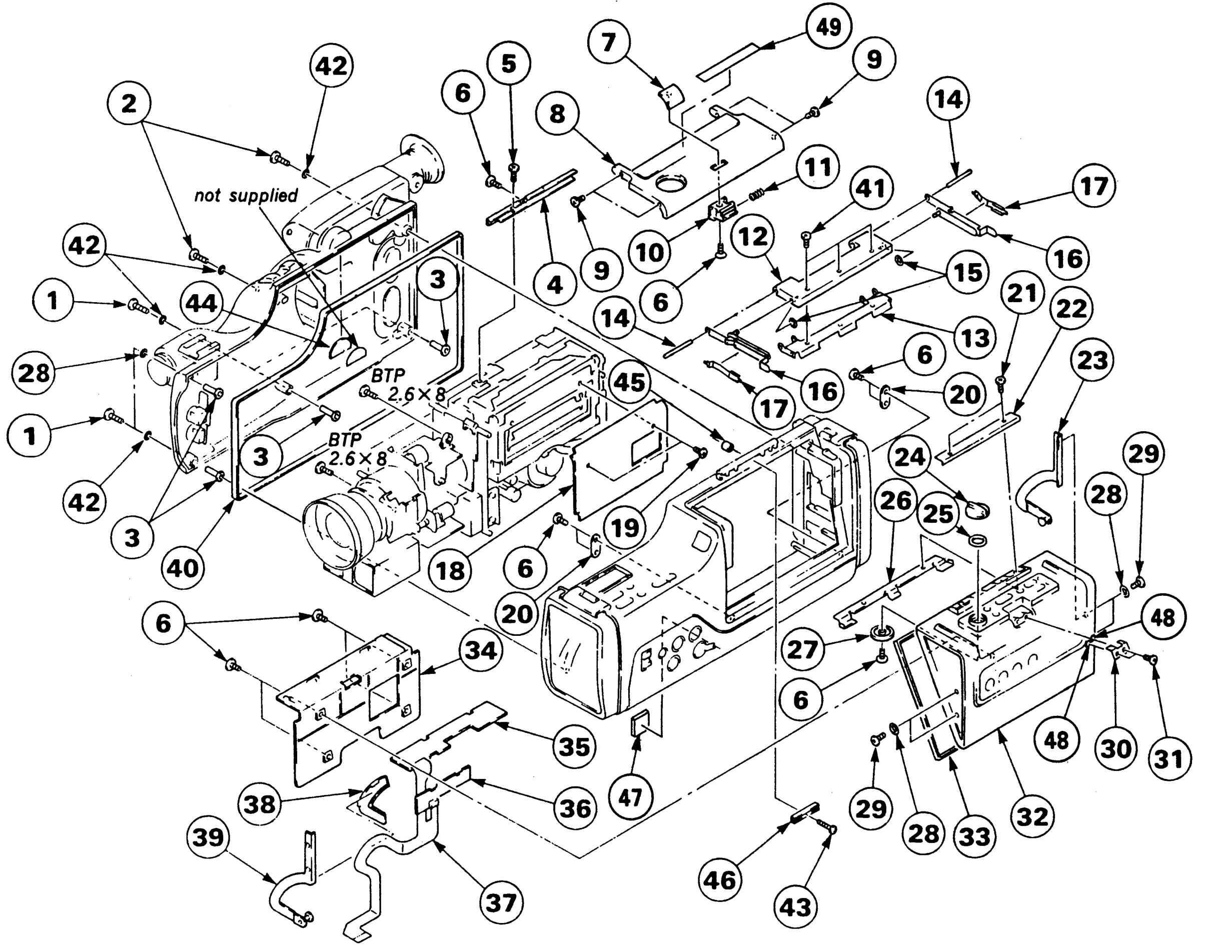
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts' Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

- CND: Canadian model

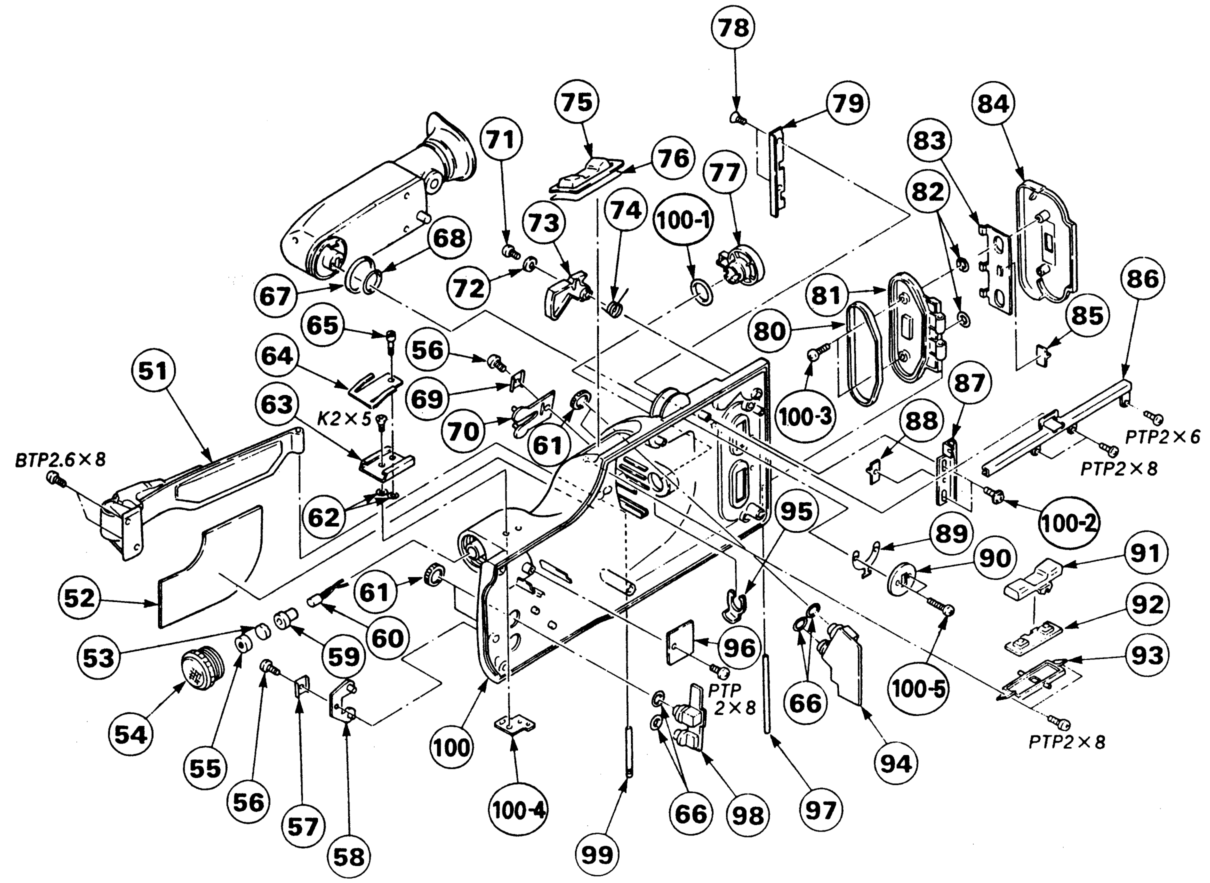
5-1. VTR BUTTON COVER AND CASSETTE LID ASSEMBLIES



o.	Part No.	Description	Remark
1	3-728-644-01	SCREW, CABINET	
2	3-728-662-01	SCREW (2.6X10), TAPPING	
3	3-728-645-01	SLEEVE	
4	3-730-835-01	REINFORCEMENT, CABINET (R)	
5	3-719-381-01	SCREW (M2X4)	
6	3-713-790-01	SCREW (M2X6), TAPPING, P3	
7	3-726-567-01	KNOB, BUTTON COVER LOCK	
8	3-728-538-01	COVER, VTR BUTTON	
9	3-728-661-01	SCREW (M2X3)	
10	3-726-582-01	LEVER, LOCK, BUTTON COVER	
11	3-564-951-00	SPRING, COMPRESSION	
12	3-728-543-01	BUCKLE	
13	3-728-544-01	STOPPER, BUCKLE	
14	3-728-545-01	SHAFT, BUCKLE	
15	9-910-999-36	RING (E1.5) RETAINING	
16	X-3724-590-1	LEVER ASSY, SLIDE	
17	3-728-546-01	SPRING	
18	3-726-586-01	LID, CASSETTE COMPARTMENT	
19	3-713-791-01	SCREW (M1.7X5), TAPPING, P2	
20	3-728-599-01	RETAINER, SHAFT	
21	2-115-897-21	SCREW (M2X10) (SUS)	
22	3-728-519-01	RETAINER (A), BUCKLE	
23	X-3724-587-1	BRACKET (R) ASSY, CASSETTE LID	
24	3-726-572-01	KNOB, POWER	
25	3-728-663-01	RING (P 7), O	
26	3-728-520-01	RETAINER (B), BUCKLE	

No.	Part No.	Description	Remark
27	3-726-573-01	HOLDER, POWER KNOB	
28	2-115-882-01	RING	
29	3-728-660-01	SCREW (M2X4)	
30	3-728-521-01	PLATE, LOCK, BUTTON COVER	
31	3-728-659-01	SCREW (2X5), TAPPING	
32	X-3724-585-1	LID ASSY, CASSETTE	
	X-3726-561-1	**LID ASSY. CASSETTE (GRAY:CND)**	
33	3-728-604-01	PACKING, CASSETTE LID	
34	3-728-558-01	LID (REAR), CASSETTE	
35	*A-7070-721-A	FV-3 BOARD, COMPLETE	
36	*A-7070-722-A	TI-13 BOARD, COMPLETE	
37	1-627-900-11	FP-146 FLEXIBLE BOARD	
38	3-726-575-01	COVER, BRACKET, CASSETTE LID	
39	X-3724-586-1	BRACKET (F) ASSY, CASSETTE LID	
40	3-728-557-01	PACKING, CABINET	
41	2-115-893-01	SCREW (M1.7X2.5)	
42	3-728-664-01	RING, O	
43	3-730-857-01	+P M2×14	
44	3-730-844-01	REINFORCEMENT (B)	
45	3-730-845-01	SPACER, REINFORCEMENT	
46	3-730-843-01	REINFORCEMENT (A)	
47	3-730-839-01	SPACER, MD	
48	3-730-840-01	SPACER, LOCK PLATE	
49	×3-730-859-01	LABEL, WATER CAUTION	

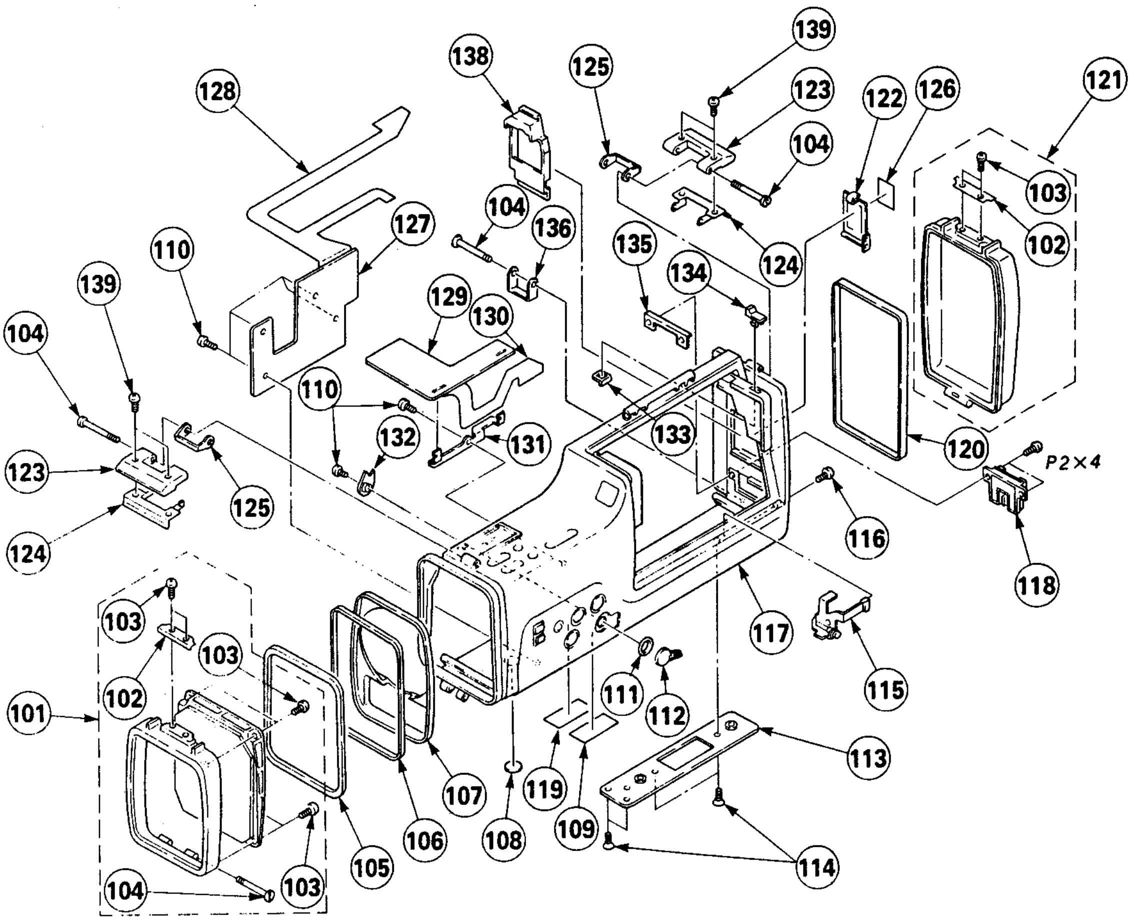
5-2. CABINET (LEFT) ASSEMBLY



No.	Part No.	Description	Remark
51	3-728-579-01	BELT, GRIP	
52	*3-728-563-01	RUBBER, GRIP	
53	3-730-850-01	SHEET, WATERPROOF	
54	X-3724-594-1	NET ASSY, MICROPHONE	
55	2-115-879-01	RING, RETAINER	
56	3-728-659-01	SCREW (2X5), TAPPING	
57	3-728-576-01	RETAINER, MIC JACK LID	
58	3-728-575-01	LID, MIC JACK	
59	3-728-593-01	HOLDER, MICROPHONE	
60	A-7090-863-A	MIC ASSY (C-1007D)	
61	3-728-674-01	NUT, ROUND, KNURL	
62	2-115-882-01	RING	
63	3-688-985-01	SHOE, ACCESSORY	
64	3-688-940-11	SPRING, LEAF	
65	2-120-002-01	SCREW, ACC LINING STOPPER	
66	3-336-115-01	RING, O	
67	3-728-597-01	BUSHING, EVF	
68	3-728-672-01	RING (P12), O	
69	3-728-574-01	RETAINER, LINCS JACK LID	
70	3-728-581-01	LID, LINCS JACK	
71	2-120-001-01	SCREW (2.6X8), TAPPING, (+) (K)	
72	3-730-809-01	BRACKET, LOCK KNOB	
73	3-726-592-01	KNOB, LOCK, EVF	
	3-726-592-21	**KNOB. LOCK. EVF (GRAY:CND)**	
74	3-728-582-01	SPRING, TORSION	
75	3-730-812-01	BUTTON, ZOOM	
76	3-730-811-01	SHEET, ADHESIVE, ZOOM BUTTON	
77	X-3724-593-1	SWITCH ASSY, REC	
78	3-728-693-01	SCREW (2X5) (TYPE 2), TAPPING	

No.	Part No.	Description	Remark
79	3-728-568-01	PLATE (UPPER), LOCK, JACK LID	
80	3-728-569-01	PACKING, JACK LID	
81	3-726-594-01	LID (LOWER), JACK	
	3-726-594-21	**LID (LOWER). JACK (GRAY:CND)**	
82	3-669-946-00	RING (P4), O	
83	3-728-577-01	PLATE (LOWER), LOCK, JACK LID	
84	3-728-567-01	LID (UPPER), JACK	
	3-728-567-21	**LID (UPPER). JACK (GRAY:CND)**	
85	3-726-577-01	KNOB, LOCK, JACK LID	
	3-726-577-21	**KNOB. LOCK. JACK LID (GRAY:CND)**	
86	3-728-580-01	REINFORCEMENT, CABINET (L)	
87	3-728-571-01	PLATE, SWITCH, EDIT	
88	3-728-570-01	KNOB, EDIT	
89	3-728-671-01	SPRING	
90	3-728-670-01	BRACKET, EVF	
91	3-726-591-01	KEY, ZOOM	
92	*1-627-910-11	ZM-9 BOARD	
93	3-726-590-01	BASE, ZOOM BUTTON	
94	*1-627-903-14	SW-93 BOARD	
95	3-726-579-01	PLATE, LOCK, REC	
96	*A-7061-278-A	MC-29 BOARD, COMPLETE	
97	3-728-583-01	SHAFT, JACK LID	
98	*1-627-908-11	MJ-19 BOARD	
99	3-728-578-01	SHAFT, GRIP BELT FITTING	
100	X-3724-591-1	CABINET (LEFT) ASSY	52, 75, 76
	X-3726-563-1	**CABINET (LEFT) ASSY (GRAY:CND)**	52, 75, 76
100-1	4-870-946-00	RING (P11), O	
100-2	3-669-480-21	SCREW, +PTPWH2	
100-3	3-713-790-01	SCREW (M2×6), TAPPING, P3	
100-4	3-688-941-01	NUT, PLATE, SHOE	
100-5	3-720-811-01	SCREW (M2×12)	

5-3. CABINET (RIGHT) ASSEMBLY


139
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P2×4
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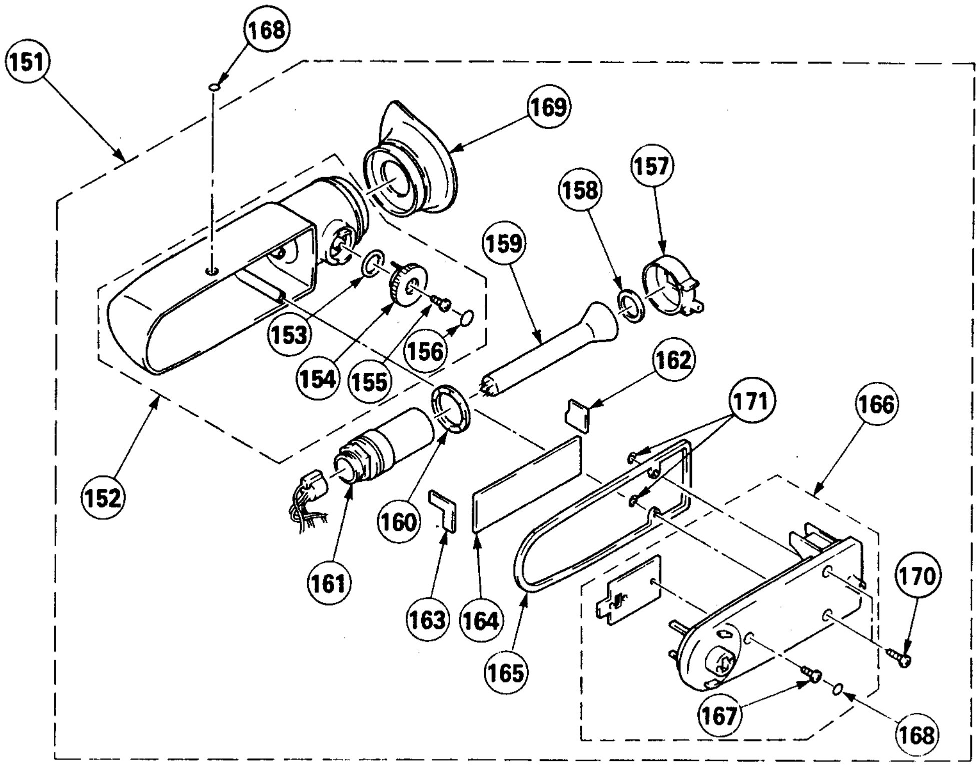
103

No.	Part No.	Description	Remark
101	A-7080-564-A	CABINET BLOCK ASSY, FRONT	102-104
	A-7080-620-A	**CABINET BLOCK ASSY. FRONT (GRAY:CND)**	102-104
102	3-728-508-01	RETAINER, BUCKLE (S)	
103	3-728-659-01	SCREW (2X5), TAPPING	
104	3-728-559-01	SCREW, FRONT CABINET	
105	3-728-550-01	ORNAMENT, FRONT	
106	3-728-555-01	PACKING, FRONT	
107	3-726-595-01	PLATE, LIGHT TRANSMISSION	
108	3-728-602-01	PLATE, BLIND, ADJUSTMENT HOLE	
	3-728-602-21	**PLATE. BLIND. ADJUSTMENT HOLE (GRAY:CND)**	
109	*3-728-695-01	LABEL. MODEL NUMBER (U/C MODEL)	
109	*3-730-882-01	LABEL. MODEL NUMBER (E MODEL)	
110	3-713-790-01	SCREW (M2X6), TAPPING, P3	
111	3-728-663-01	RING (P 7), O	
112	3-726-585-01	KNOB, AL	
113	3-728-551-01	SCREW, TRIPOD	
114	2-120-001-01	SCREW (2.6X8), TAPPING, (+) (K)	
115	X-3725-146-1	KNOB ASSY, B LOCK	
116	3-728-661-01	SCREW (M2X3)	
117	X-3724-588-1	CABINET (RIGHT) ASSY	122, 138
	X-3725-179-2	**CABINET (RIGHT) ASSY (GRAY:CND)**	122, 138
118	1-535-658-11	TERMINAL BOARD	
119	*3-704-367-01	LABEL (US MODEL)	
120	3-728-556-01	PACKING, BATTERY COVER	
121	A-7080-565-A	COVER (S) BLOCK ASSY, BATTERY	102, 103
122	3-726-587-01	LID, BATTERY CASE	
123	X-3725-138-2	**BUCKLE (S) ASSY**	124, 139
	X-3725-169-2	**BUCKLE (S) ASSY (GRAY:CND)**	124, 139
124	3-728-547-01	STOPPER, BUCKLE (S)	
125	3-728-548-01	BRACKET, BELT	
126	*3-704-256-01	LABEL. CAUTION (U MODEL)	
127	*A-7061-289-A	FC-19 BOARD, COMPLETE	
128	1-627-885-11	FP-144 FLEXIBLE BOARD	
129	*A-7070-718-A	FD-9 BOARD, COMPLETE	
130	1-627-886-11	FP-145 FLEXIBLE BOARD	
131	*3-728-631-01	BRACKET, FD PC BOARD	
132	3-726-568-01	HOLDER, AL KNOB	
133	3-726-571-01	HOLDER, EJECT KNOB	
134	3-726-570-01	KNOB, EJECT	
135	3-728-552-01	BRACKET, TERMINAL	
136	3-728-665-01	BRACKET (LOWER), BELT	
138	3-728-666-01	COVER, LI	
139	2-115-893-01	SCREW (M1.7X2.5)	

5-4. EVF BLOCK ASSEMBLY

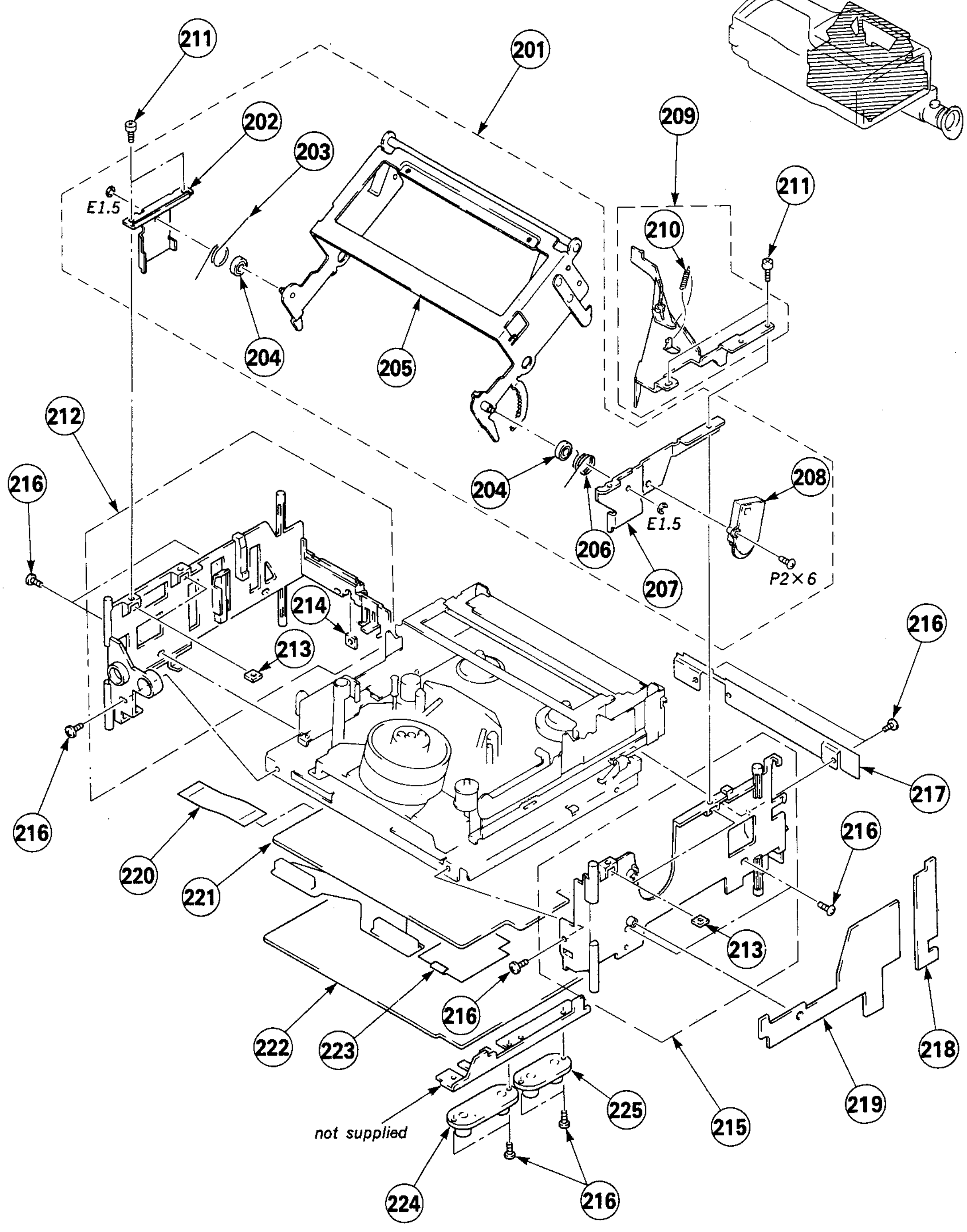


No.	Part No.	Description	Remark
151	A-7019-110-A	EVF BLOCK ASSY (U/C MODEL)	152-171
	A-7019-175-A	EVF BLOCK ASSY (GRAY:CND)	152-171
	A-7019-135-A	EVF BLOCK ASSY (E MODEL)	152-171
152	X-3725-116-1	CABINET(LEFT) ASSY, EVF(U/C MODEL)	153-156
	X-3726-562-1	CABINET (LEFT) ASSY, EVF (GRAY:CND)	153-156
	X-3724-597-1	CABINET(LEFT) ASSY, EVF(E MODEL)	153-156
153	3-730-814-01	RING, 0	
154	3-726-581-01	KNOB, ADJUSTMENT	
155	3-713-790-01	SCREW (M2×6), TAPPING, P3	
156	3-730-813-01	PLATE, BLIND, ADJUSTMENT KNOB	
157	X-3724 596-1	HOLDER ASSY, CRT	
158	3-724-570-01	RING, CRT FIXED	
159	⚠1-546-065-11	CATHODE-RAY TUBE, B/W (MOIJVV47WB) (V901)	

No.	Part No.	Description	Remark
160	3-724-549-01	LOCK, CRT	
161	⚠1-451-310-21	DEFLECTION YOKE (B/W) (L951)	
162	*1-627-911-12	TL-21 BOARD	
163	*1-627-912-12	TL-24 BOARD	
164	*A-7061-291-A	VF-20 BOARD, COMPLETE	
165	3-728-596-01	PACKING, EVF	
166	X-3725-122-1	CABINET (RIGHT) ASSY, EVF	167, 168
	X-3725-162-1	CABINET (RIGHT) ASSY, EVF (GRAY:CND)	167, 168
167	3-728-661-01	SCREW (M2×3)	
168	3-728-669-01	PLATE, BLIND, FOCUS	
	3-728-669-21	PLATE, BLIND, FOCUS (GRAY:CND)	
169	X-3725-121-1	EYE CUP	
170	3-728-668-01	SCREW (2×8) (TYPE2), TAPPING	
171	3-730-840-01	SPACER, LOCK PLATE	

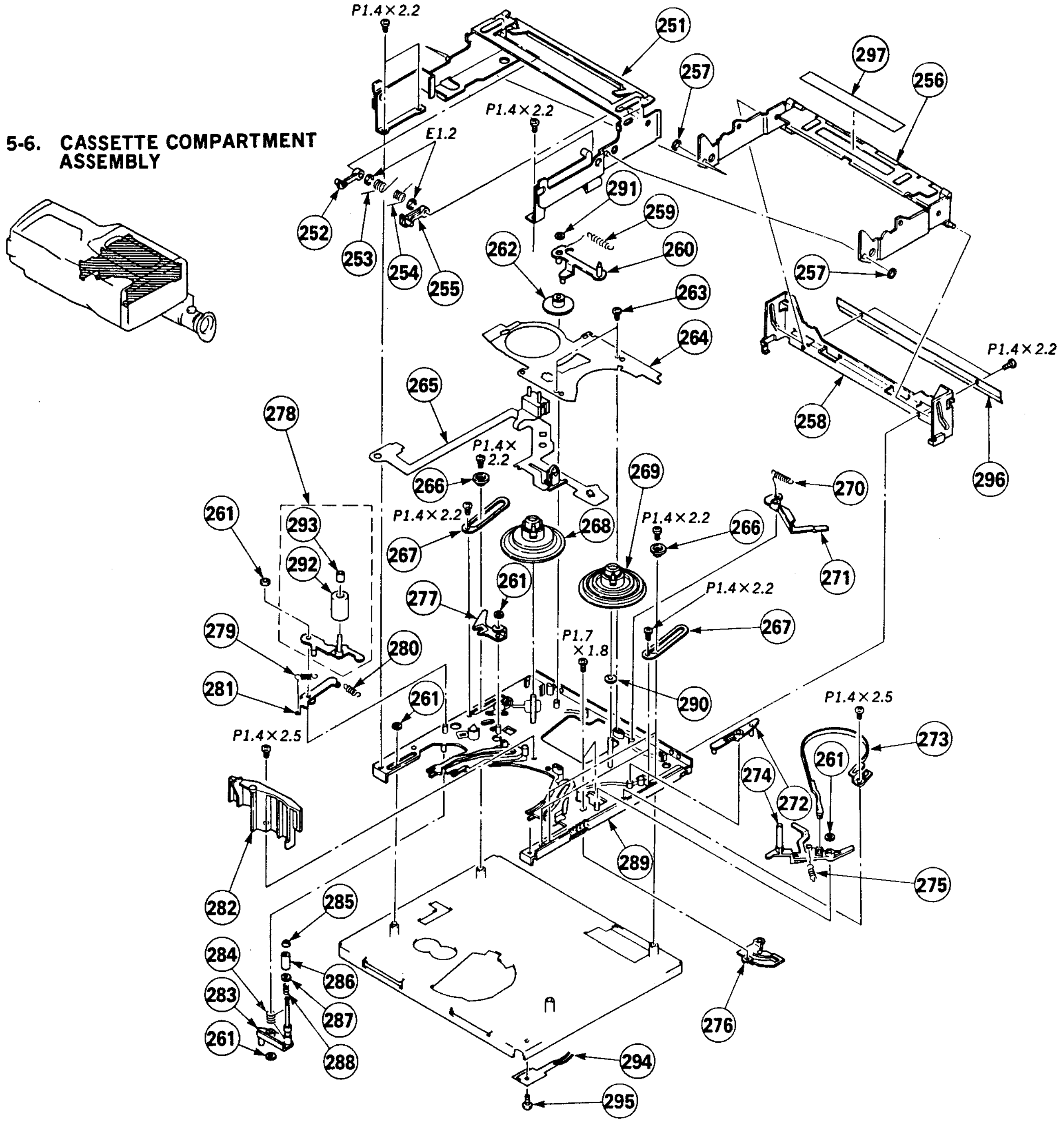
Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-5. CASSETTE ARM AND FRAME ASSEMBLIES


211
201
202
203
209
211
210
E1.5
204
205
212
216
204
208
206
E1.5
207
P2×6
214
213
216
216
217
216
220
221
213
216
222
223
218
219
225
215
not supplied
224
216

No.	Part No.	Description	Remark
201	A-7040-141-A	ARM BLOCK ASSY (3), CASSETTE	202-208
202	*3-719-606-01	PLATE (T2) (M), SIDE	
203	3-695-582-01	SPRING, TORSION	
204	3-695-512-02	COLLAR, CASSETTE ARM	
205	X-3712-034-4	ARM ASSY (2), CASSETTE	
206	3-695-581-01	SPRING, TORSION	
207	3-695-641-01	PLATE (S2), SIDE	
208	3-681-528-11	DAMPER	
209	A-7040-140-B	GUARD BLOCK ASSY, TAPE	210
210	3-695-718-01	SPRING, TENSION	
211	3-719-697-01	SCREW (M1.7X5), SPECIAL HEAD	
212	*X-3724-503-1	FRAME (F) ASSY, MD	213, 214
213	3-716-418-01	NUT, FRAME PLATE	
214	3-718-233-01	NUT, PLATE	
215	*X-3724-504-1	FRAME (R) ASSY, MD	213
216	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
217	*3-728-689-01	PLATE (B), BLIND, MD	
218	*1-627-909-11	EJ-6 BOARD	
219	*1-627-905-11	PA-14 BOARD	
220	1-574-083-11	CABLE, FLAT (1.0MM PITCH) 15P	
221	*A-7061-282-A	SS-86 BOARD, COMPLETE	
222	*A-7061-165-A	VA-40 BOARD, COMPLETE	
223	*3-726-558-01	PLATE, SHIELD, VA-SS	
224	1-537-142-11	TERMINAL BOARD (AV OUT) (J361	
225	1-565-298-11	JACK, PIN 2P (AV IN) (J360)	

5-6. CASSETTE COMPARTMENT ASSEMBLY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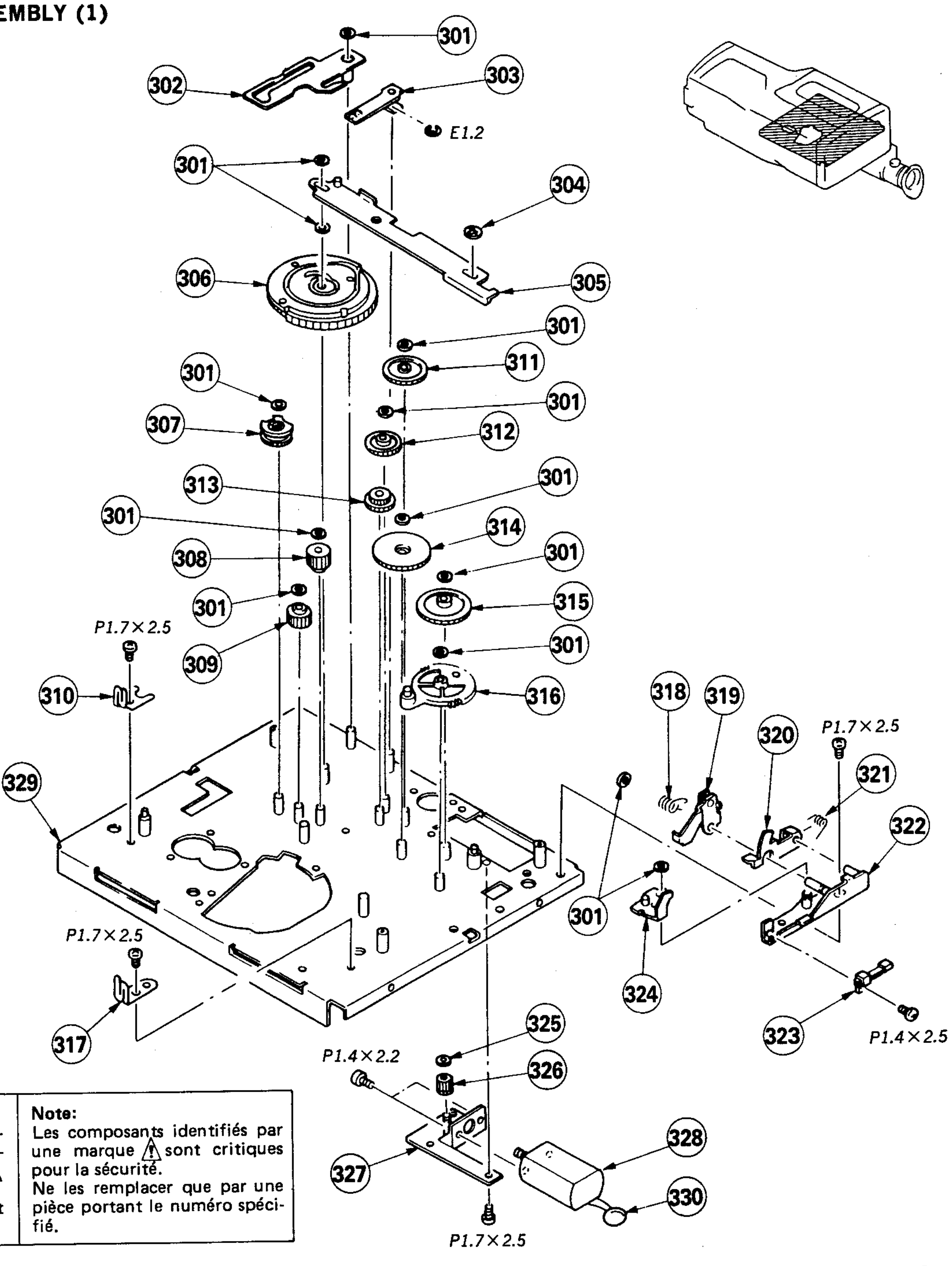
No.	Part No.	Description	Remark
251	X-3695-447-6	COMPARTMENT ASSY, CASSETTE, LS	
252	3-695-595-01	RETAINER (T), CASSETTE	
253	3-695-605-01	SPRING, TORSION	
254	3-695-604-01	SPRING, TORSION	
255	3-695-594-01	RETAINER (S), CASSETTE	
256	X-3695-448-3	ARM ASSY, BLIND	
257	3-669-465-00	WASHER (1.5), STOPPER	
258	3-695-646-01	ARM, LS	
259	3-695-718-01	SPRING, TENSION	
260	X-3712-037-1	LEVER (A) ASSY (2)	
261	3-315-384-31	WASHER, STOPPER	
262	X-3712-025-1	GEAR ASSY, TS	
263	3-699-402-01	SCREW (M1.3X5.5), TAPPING	
264	3-712-165-01	PLATE (2), STOPPER	
265	A-7060-693-A	FP-53 BOARD, COMPLETE	
266	3-695-698-01	GUIDE, LS	
267	3-695-697-01	SPRING, LEAF, LS	
268	X-3695-436-1	TABLE ASSY, REEL, TAKE-UP	
269	X-3712-038-1	TABLE ASSY (2), REEL, SUPPLY	290
270	3-542-475-00	SPRING, TENSION	
271	3-712-151-01	BRAKE (2), SOFT	
272	3-695-735-04	ARM, TG1 RELEASE	
273	X-3695-432-1	BAND ASSY, TG1	
274	X-3712-019-1	ARM ASSY (2), TG1	
275	3-695-591-01	SPRING, TENSION	
276	3-695-733-01	PLATE, CAM, LS	
277	X-3712-022-1	ARM (B) ASSY (2), PINCH	
278	X-3712-032-2	ARM (C) ASSY (2), PINCH	292, 293
279	3-695-622-01	SPRING, TENSION	
280	3-695-719-01	SPRING, TENSION	
281	X-3695-415-1	PINCH LEVER ASSY	
282	3-695-624-01	BASE, PROTECT	
283	X-3712-027-1	ARM ASSY (2), TG7	
284	3-695-541-01	SPRING	
285	3-712-158-01	FLANGE, UPPER, TG7	
286	3-712-160-01	SLEEVE (2), TG7	
287	3-712-159-01	FLANGE, LOWER, TG7	
288	3-712-157-01	SPRING, COMPRESSION	
289	X-3713-962-1	CHASSIS ASSY (2), LS	
290	3-701-444-01	WASHER, 6	
291	3-321-393-01	WASHER, STOPPER	
292	X-3695-416-1	PINCH ROLLER ASSY	
293	3-695-569-01	SLEEVE (P), PINCH INNER	
294	*3-725-151-01	PLATE, GROUND, RP	
295	3-719-695-21	SCREW (M1.7X2.5), SPECIAL HEAD	
296	*3-728-688-01	PLATE (A), BLIND, MD	
297	*3-697-539-01	LABEL, CAUTION	

5-7. CHASSIS ASSEMBLY (1)

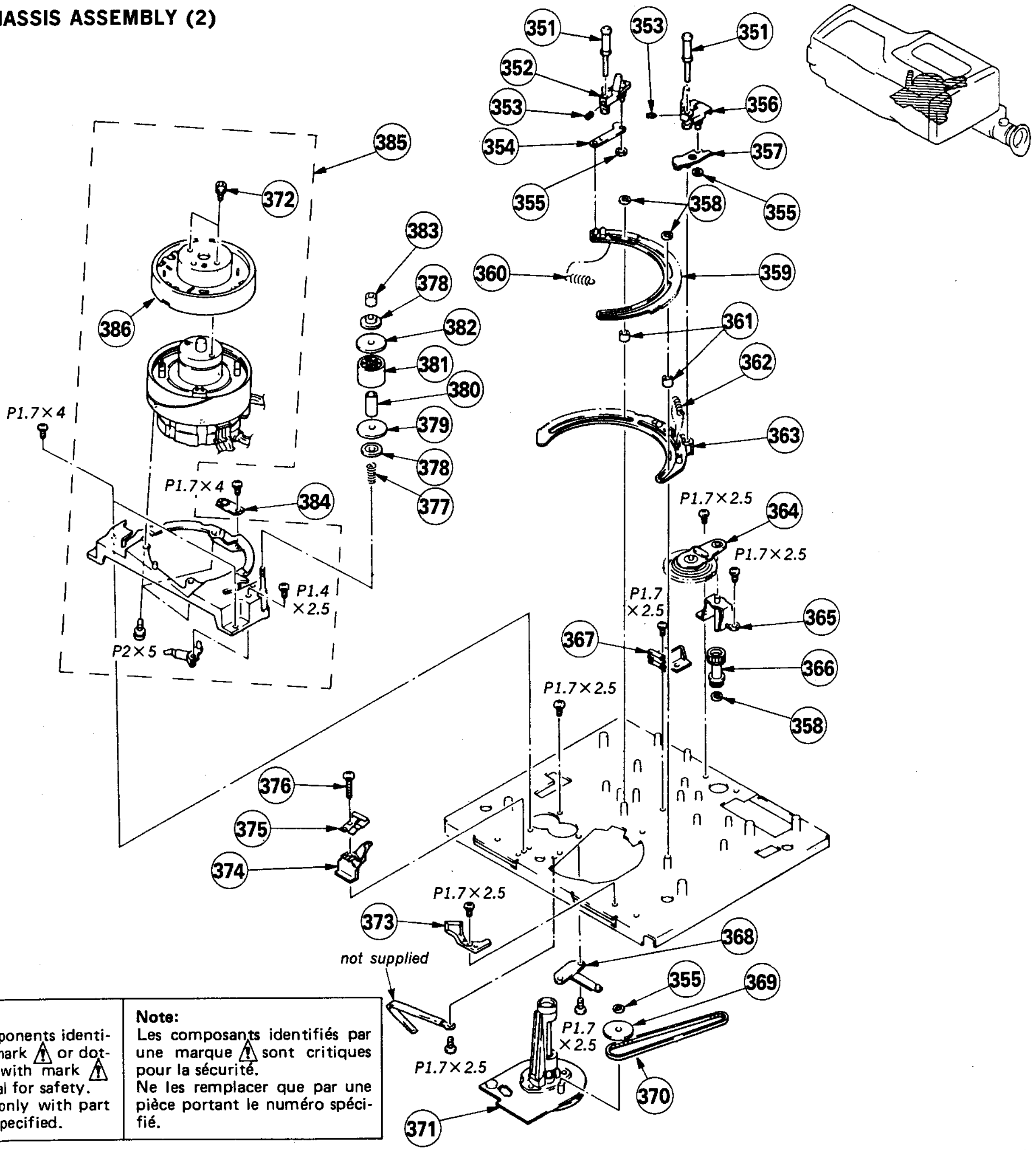


Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark
301	3-315-384-31	WASHER, STOPPER	
302	X-3712-023-1	ARM (A) ASSY (2), PINCH	
303	3-695-589-01	LEVER (B), REEL LOCK	
304	3-669-465-00	WASHER (1.5), STOPPER	
305	X-3695-439-4	SLIDER ASSY, M	
306	X-3712-031-1	CAM ASSY (2)	
307	3-712-156-01	GEAR (M) (2), THREADING	
308	3-695-537-01	GEAR (T), THREADING	
309	3-695-536-01	GEAR (S), THREADING	
310	3-695-706-01	SPRING (T)	
311	3-695-559-01	GEAR (B), THREADING	
312	3-695-724-01	GEAR (D), THREADING	
313	3-712-162-02	GEAR (C) (2), THREADING	
314	3-695-714-01	GEAR (A), LS	
315	3-695-563-04	GEAR (B), LS	
316	X-3695-417-1	GEAR (C) ASSY, LS	
317	3-695-705-01	SPRING (S)	
318	3-713-937-01	SPRING (A) (2)	
319	X-3695-418-1	ARM ASSY, LOCK	
320	3-695-574-01	ARM, RETURN PREVENTION	
321	3-695-579-01	SPRING (B), TORSION	
322	X-3712-018-1	BASE ASSY (2), LOCK	
323	1-553-226-00	SWITCH, LEAF (CASSETTE DOWN) (S902)	
324	X-3695-438-1	ARM ASSY, EJECT	
325	3-321-393-01	WASHER, STOPPER	
326	3-712-150-01	WHEEL, WORM	
327	X-3712-017-1	HOLDER ASSY, MOTOR	
328	⚠.1-541-508-11	MOTOR, DC (LA14-323F) (LOADIG) (M903)	
329	X-3712-036-1	CHASSIS ASSY (2), MECHANICAL	
330	1-161-032-00	CAP, CERAMIC 0.01MF (C901)	

5-8. CHASSIS ASSEMBLY (2)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P1.7×2.5
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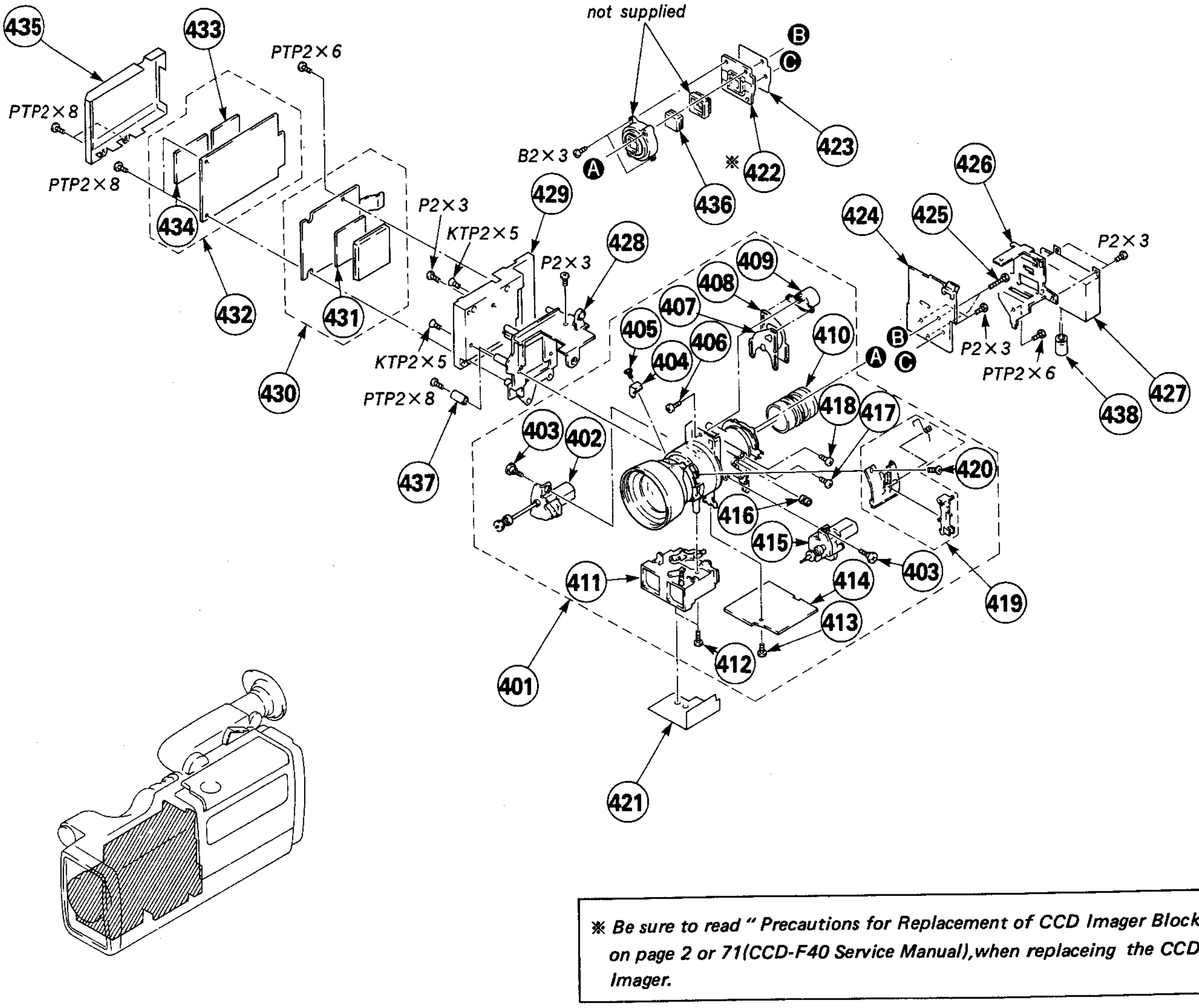
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark
351	X-3712-029-1	ROLLER ASSY (2), GUIDE	
352	X-3712-030-1	BASE ASSY (2), TG5	
353	3-695-770-01	SCREW, GR LOCK	
354	3-695-545-01	JOINT, T	
355	3-321-393-01	WASHER, STOPPER	
356	X-3712-028-1	BASE ASSY (2), TG4	
357	X-3695-429-1	JOINT ASSY, S	
358	3-315-384-31	WASHER, STOPPER	
359	X-3695-414-1	SLIDER (T) ASSY, THREADING	
360	3-695-773-01	SPRING, TENSION	
361	3-695-544-01	ROLLER, GUIDE	
362	3-695-772-01	SPRING, TENSION	
363	X-3695-428-1	SLIDER (S) ASSY, THREADING	
364	X-3712-024-1	ARM ASSY (2), GEAR	
365	X-3712-020-1	BASE ASSY (2), MIDWAY PULLEY	
366	X-3712-021-1	PULLEY ASSY (2), MIDWAY	
367	3-712-163-01	SUPPORT (2), SLIDER	
368	1-535-574-11	TERMINAL, SHAFT GROUND	
369	X-3695-413-1	GEAR ASSY, CHANGE	
370	3-695-637-01	BELT, RELAY	
371	8-835-309-01	MOTOR, DC BHF-3301C (CAPSTAN) (M902)	
372	3-686-440-01	SCREW (2X5), BOLT WASHER	
373	3-695-627-01	STOPPER, SLIDER, S	
374	3-695-628-01	STOPPER, SLIDER, T	
375	3-695-677-01	SPRING (T), LEAF	
376	3-695-519-01	SCREW, FITTING, LEAF SPRING(T)	
377	3-695-532-01	SPRING, COMPRESSION	
378	3-695-727-01	RETAINER, FLANGE, UPPER	
379	3-695-794-01	FLANGE, LOWER, TG2	
380	3-695-530-01	SLEEVE, TG2	
381	3-712-164-01	ROLLER (2), TG2	
382	3-695-528-01	FLANGE, TG2	
383	3-695-529-01	NUT, TG2	
384	1-807-238-11	SENSOR, DEW CONDENSATION	
385	⚠.A-7048-173-A	DRUM ASSY (DGU-20B-R)	372, 386
386	A-7049-130-A	DRUM ASSY, UPPER (DGR-20-R)	

5-9. CAMERA ASSEMBLY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※ *Be sure to read " Precautions for Replacement of CCD Imager Block" on page 2 or 71(CCD-F40 Service Manual),when replaceing the CCD Imager.*

No.	Part No.	Description	Remark
401	1-547-302-11	LENS, ZOOM (VCL-906XC)	402-420
402	3-707-448-01	MOTOR UNIT, AF (M905)	
403	3-707-447-01	SCREW, MOTOR CLAMP	
404	3-707-446-01	STOPPER, (N)	
405	3-707-445-01	SCREW, (N) STOPPER CLAMP	
406	3-707-444-01	SCREW, IG METER CLAMP	
407	3-707-457-01	(B) ASSY, IRIS FEATHER	
408	3-707-458-01	FEATHER, IRIS (A)	
409	3-707-442-01	METER, IG (IRIS) (M904)	
410	3-707-456-01	MIRROR TUBE UNIT, RELAY	
411	3-707-449-01	BLOCK UNIT, AF	
412	3-707-450-01	SCREW, AF BLOCK CLAMP	
413	3-707-459-01	SCREW, AF PC BOARD CLAMP	
414	3-707-521-01	PC BOARD UNIT, AF	
415	3-707-452-01	MOTOR UNIT, ZOOM (M906)	
416	3-707-453-01	ROLLER, ECCECTRIC	
417	3-707-454-01	SCREW	
418	3-707-455-01	SCREW, RELAY SET	
419	3-707-523-01	MICRO UNIT	
420	3-707-522-01	SCREW, MICRO UNIT CLAMP	
421	3-726-533-01	COVER, AF	
422※	A-7090-878-A	CCD ASSY (CCD IMAGER)	
423	*3-725-180-01	SHEET, INSULATING, CCD HOLDER	
424	*A-7061-353-A	VC-38 BOARD, COMPLETE	
425	3-335-640-51	SCREW (M2X16)	
426	3-725-182-01	JOINT	
427	1-464-993-11	CONVERTER, DC-DC	
428	*3-726-596-01	FRAME, CAMERA	
429	*X-3724-550-1	CASE (A) ASSY, SHIELD, VC	
430	*A-7061-329-A	VC-39 BOARD, COMPLETE	431
431	A-7068-127-A	DT-71 BOARD, COMPLETE (HIC)	
432	*A-7061-163-A	VC-40 BOARD, COMPLETE	433, 434
433	A-7068-129-A	PR-20 BOARD, COMPLETE (HIC)	
434	A-7068-128-A	MX-7 BOARD, COMPLETE (HIC)	
435	*X-3724-551-1	CASE (B) ASSY, SHIELD, VC	
436	A-7090-879-A	KIT, FILTER, OPTICAL	
437	3-728-690-01	SLEEVE, CF	
438	1-124-472-11	CAP, ELECT 470MF	

MC-29 **FC-19**

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

*A-7061-278-A MC-29 BOARD, COMPLETE (Ref No. 4000 Series)
****

CAPACITOR

Ref.No	Part No.	Description		Remark
C585	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C586	1-124-225-00	ELECT 100MF	20%	6.3V
C587	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C588	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C589	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C590	1-163-137-00	CERAMIC CHIP 680PF	10%	50V
C591	1-163-077-00	CERAMIC CHIP 0.1MF		50V
C592	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C593	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C594	1-162-638-11	CERAMIC CHIP 1MF		16V
C595	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C596	1-124-225-00	ELECT 100MF	20%	6.3V
C598	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C599	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C600	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C601	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V

CONNECTOR

Ref.No	Part No.	Description		Remark
CN585	*1-566-196-11	PIN, CONNECTOR (PC BOARD) 3P		

DIODE

Ref.No	Part No.	Description		Remark
D585	8-719-105-32	DIODE RD2.7M-T1B1		

IC

Ref.No	Part No.	Description		Remark
IC585	8-759-820-51	IC LA7293M		

TRANSISTOR

Ref.No	Part No.	Description		Remark
Q585	8-729-905-35	TRANSISTOR 2SC4081R		

RESISTOR

Ref.No	Part No.	Description		Remark
R585	1-216-061-00	METAL GLAZE 3.3K	5%	1/10W
R586	1-216-081-00	METAL GLAZE 22K	5%	1/10W
R587	1-216-097-00	METAL GLAZE 100K	5%	1/10W
R588	1-216-059-00	METAL GLAZE 2.7K	5%	1/10W
R589	1-216-069-00	METAL GLAZE 6.8K	5%	1/10W
R590	1-216-025-00	METAL GLAZE 100	5%	1/10W
R591	1-216-063-00	METAL GLAZE 3.9K	5%	1/10W
R592	1-216-095-00	METAL GLAZE 82K	5%	1/10W
R593	1-216-295-00	METAL GLAZE 0	5%	1/10W

****

*A-7061-289-A FC-19 BOARD, COMPLETE (Ref No. 4000 Series)
****

CAPACITOR

Ref.No	Part No.	Description		Remark
C160	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C161	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C162	1-162-638-11	CERAMIC CHIP 1MF		16V
C163	1-162-638-11	CERAMIC CHIP 1MF		16V
C164	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C165	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C166	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C190	1-163-033-00	CERAMIC CHIP 0.022MF		50V
C191	1-124-246-61	ELECT 6.8MF	20%	35V
C192	1-124-246-61	ELECT 6.8MF	20%	35V
C193	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C194	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C195	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C196	1-163-021-00	CERAMIC CHIP 0.01MF		50V

CONNECTOR

Ref.No	Part No.	Description		Remark
CN190	1-566-535-11	CONNECTOR, FPC (ZIF) 19P		
CN191	*1-564-001-11	PIN, CONNECTOR 2P		
CN192	*1-564-001-11	PIN, CONNECTOR 2P		
CN193	1-566-530-11	CONNECTOR, FPC (ZIF) 14P		
CN194	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P		

TRIMMER

Ref.No	Part No.	Description		Remark
CT190	1-141-331-11	CAP, VAR, TRIMMER (CHIP)		

DIODE

Ref.No	Part No.	Description		Remark
D160	8-719-404-12	DIODE MA159		
D161	8-719-105-73	DIODE RD4.7M-B2		
D190	8-719-105-99	DIODE RD6.2M-B1		

IC

Ref.No	Part No.	Description		Remark
IC190	8-759-142-88	IC UPD7503G-A80-12		
IC191	8-759-937-56	IC S-8054ALB-LM-S		

TRANSISTOR

Ref.No	Part No.	Description		Remark
Q160	8-729-905-23	TRANSISTOR 2SA1576R		
Q161	8-729-905-23	TRANSISTOR 2SA1576R		
Q163	8-729-905-23	TRANSISTOR 2SA1576R		
Q164	8-729-905-23	TRANSISTOR 2SA1576R		
Q165	⚠8-729-109-42	TRANSISTOR 2SK94-X2		
Q166	8-729-905-35	TRANSISTOR 2SC4081R		
Q167	8-729-903-97	TRANSISTOR FMS1FE		
Q168	8-729-905-35	TRANSISTOR 2SC4081R		
Q190	8-729-810-19	TRANSISTOR 2SC4396		
Q191	8-729-905-23	TRANSISTOR 2SA1576R		
Q192	8-729-903-97	TRANSISTOR FMS1FE		

RESISTOR

Ref.No	Part No.	Description		Remark
R120	1-216-097-00	METAL GLAZE 100K	5%	1/10W
R121	1-216-097-00	METAL GLAZE 100K	5%	1/10W
R122	1-216-097-00	METAL GLAZE 100K	5%	1/10W
R123	1-216-097-00	METAL GLAZE 100K	5%	1/10W
R124	1-216-073-00	METAL GLAZE 10K	5%	1/10W
R125	1-216-097-00	METAL GLAZE 100K	5%	1/10W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R126	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R127	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R128	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R129	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R130	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R131	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R132	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R133	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R134	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R135	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R136	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R137	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R138	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R139	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R140	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R141	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R142	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R143	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R144	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R145	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R146	1-216-543-11	METAL GLAZE	1M	1%	1/10W	
R147	1-216-543-11	METAL GLAZE	1M	1%	1/10W	
R148	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R149	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R160	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R161	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R162	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R163	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R164	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R165	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R166	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R167	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R168	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R169	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R170	1-216-129-00	METAL GLAZE	2.2M	5%	1/10W	
R171	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R172	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R173	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R174	1-216-530-00	METAL GLAZE	390K	1%	1/10W	
R175	1-218-167-11	METAL GLAZE	330K	1%	1/10W	
R176	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R190	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R191	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R192	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R193	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R194	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R195	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R196	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R197	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R198	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R199	1-216-073-00	METAL GLAZE	10K	5%	1/10W	

Ref.No	Part No.	Description	Remark
		SWITCH	
S190	1-570-870-21	SWITCH, SLIDE (AUTO LOCK)	
S191	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (1.2)	
S192	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (∞)	
S195	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (FOCUS)	
S196	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)(BACK LIGHT)	
S197	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (SHUTTER SPEED)	
		TERMINAL PIN	
TP190	*1-535-622-11	PIN, TERMINAL	
TP191	*1-535-622-11	PIN, TERMINAL	
		CRYSTAL	
X190	1-527-997-21	VIBRATOR, CRYSTAL (32.768KHz)	

****

	*A-7061-291-A	VF-20 BOARD, COMPLETE **********************	(Ref No. 5000 Series)
	3-713-535-01	CUSHION, CRT	
	*3-725-155-01	INSULATOR, FB	

CAPACITOR

C901	1-126-369-11	ELECT	220MF	20%	6.3V
C902	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C904	1-127-486-00	ELECT(SOLID)	47MF	20%	6.3V
C905	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C906	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C907	⚠.1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V
C908	⚠.1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C909	1-126-193-11	ELECT	1MF	20%	50V
C911	1-131-388-00	TANTALUM	68MF	10%	3.15V
C912	1-102-038-00	CERAMIC	0.001MF	99%	500V
C913	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C915	1-126-193-11	ELECT	1MF	20%	50V
C916	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C917	1-135-166-21	TANTAL. CHIP	47MF	20%	6.3V
C918	1-162-638-11	CERAMIC CHIP	1MF		16V
C919	1-135-070-00	TANTAL. CHIP	0.1MF	10%	35V
C920	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V

CONNECTOR

CN901	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P
CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P

CONPOSITION CIRCUIT BLOCK

CP901	1-238-119-11	RES, ADJ

CRYSTAL

CRT901	1-526-978-21	SOCKET ASSY, CRT

When indicating parts by reference number, please include the board name.

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

DIODE

Ref.No	Part No.	Description	Remark
D903	8-719-400-20	DIODE MA152WA	

IC

Ref.No	Part No.	Description	Remark
IC901	8-759-420-01	IC AN2512S	

COIL

Ref.No	Part No.	Description	Remark
L901	1-408-421-00	INDUCTOR 100UH	
L902	1-410-379-21	INDUCTOR CHIP 6.8UH	
L903 ⚠.	1-459-858-11	COIL, FERRITE (HLC)	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q902	8-729-402-31	TRANSISTOR 2SD1819A-Q	
Q903	8-729-106-64	TRANSISTOR 2SD1615	
Q904	8-729-216-32	TRANSISTOR 2SA1163G	

RESISTOR

Ref.No	Part No.	Description	Remark
R902	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R903	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R904 ⚠.	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R906 ⚠.	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R907	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R908	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R909	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R911	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R912	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R913	1-216-123-11	METAL GLAZE 1.2M 5% 1/10W	
R914	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R915	1-216-133-00	METAL GLAZE 3.3M 5% 1/10W	
R916	1-216-125-00	METAL GLAZE 1.5M 5% 1/10W	
R917	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R919	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R920	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R921	1-216-013-00	METAL GLAZE 33 5% 1/10W	
R922	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R923	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R924	1-216-306-11	METAL GLAZE 3.9 5% 1/10W	
R925	1-216-336-11	METAL GLAZE 47K 1% 1/10W	
R926	1-218-163-11	METAL GLAZE 120K 1% 1/10W	
R928	1-216-870-11	METAL GLAZE 180K 1% 1/10W	
R929	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R930	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R931	1-216-121-00	METAL GLAZE 1M 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV901	1-230-203-00	RES, ADJ, METAL GLAZE 2.2M	

TRANSFORMER

Ref.No	Part No.	Description	Remark
T901 ⚠.	1-439-428-11	TRANSFORMER ASSY, FLYBACK	

THERMISTOR

Ref.No	Part No.	Description	Remark
TH901	1-807-938-11	THERMISTOR	

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*1-627-911-11 TL-21 BOARD (Ref No. 5000 Series)

****

DIODE

Ref.No	Part No.	Description	Remark
D701	8-719-941-34	DIODE GL1HD51	

RESISTOR

Ref.No	Part No.	Description	Remark
R701	1-216-037-00	METAL GLAZE 330 5% 1/10W	

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*1-627-912-11 TL-24 BOARD (Ref No. 5000 Series)

****

DIODE

Ref.No	Part No.	Description	Remark
D710	8-719-941-34	DIODE GL1HD51	

****

*A-7070-718-A FD-9 BOARD, COMPLETE (Ref No. 4000 Series)

****

Ref.No	Part No.	Description	Remark
	1-808-385-21	L.C.D	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN150	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	

SWITCH

Ref.No	Part No.	Description	Remark
S150	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)	
S151	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)	
S152	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)	
S153	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)	
S154	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)	
S155	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)	

TERMINAL

Ref.No	Part No.	Description	Remark
TP150	*1-535-622-11	PIN, TERMINAL	
TP151	*1-535-622-11	PIN, TERMINAL	

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*1-627-909-11 EJ-6 BOARD (Ref No. 4000 Series)

****

SWITCH

Ref.No	Part No.	Description	Remark
S169	1-571-102-21	SWITCH, SLIDE (EJECT)	

****

When indicating parts by reference number, please include the board name.

Note:	Note:
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Ref.No	Part No.	Description	Remark
	*A-7070-721-A	FV-3 BOARD, COMPLETE *********************	(Ref No. 4000 Series)

SWITCH

Ref.No	Part No.	Description	Remark
S160	1-571-101-11	SWITCH, SLIDE (POWER)	
S161	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (SLOW)	
S162	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (FRAME)	
S163	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (PAUSE)	
S164	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (PLAY)	
S165	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (FF)	
S166	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (STOP)	
S167	1-571-102-21	SWITCH, SLIDE (REC)	
S168	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (REW)	

TERMINAL

Ref.No	Part No.	Description	Remark
TP160	*1-535-622-11	PIN, TERMINAL	
TP161	*1-535-622-11	PIN, TERMINAL	

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Ref.No	Part No.	Description	Remark
	*A-7070-722-A	IT-13 BOARD, COMPLETE ***********************	(Ref No. 4000 Series)

CONNECTOR

Ref.No	Part No.	Description	Remark
CN170	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	

SWITCH

Ref.No	Part No.	Description	Remark
S170	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (TITLE 1)	
S171	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (TITLE 2)	
S172	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (MEMO)	
S173	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (COLOR)	

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Ref.No	Part No.	Description	Remark
	*A-7070-723-A	SW-93 BOARD, COMPLETE **********************	(Ref No. 5000 Series)

CAPACITOR

Ref.No	Part No.	Description	Remark
C930	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C931	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C932	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C933	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN930	*1-566-189-11	PIN, CONNECTOR (PC BOARD) 10P	
CN931	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	

DIODE

Ref.No	Part No.	Description	Remark
D930	8-719-106-70	DIODE RD12M-B1	
D931	8-719-106-70	DIODE RD12M-B1	

JACK

Ref.No	Part No.	Description	Remark
J930	1-565-756-11	JACK, SMALL (REMOTE)	
J931	1-563-367-21	JACK (EARPHONE)	

COIL

Ref.No	Part No.	Description	Remark
L930	1-410-369-11	INDUCTOR CHIP 1UH	
L931	1-410-369-11	INDUCTOR CHIP 1UH	
L932	1-410-369-11	INDUCTOR CHIP 1UH	
L933	1-410-369-11	INDUCTOR CHIP 1UH	

RESISTOR

Ref.No	Part No.	Description	Remark
R930	1-216-009-00	METAL GLAZE 22 5% 1/10W	
R931	1-216-009-00	METAL GLAZE 22 5% 1/10W	

SWITCH

Ref.No	Part No.	Description	Remark
S930	1-570-518-11	SWITCH, LEAF (STANDBY)	
S931	1-570-689-11	SWITCH, KEY BOARD (REC, STRT/STOP)	

****

Ref.No	Part No.	Description	Remark
	*1-627-910-11	ZM-9 BOARD ***********	(Ref No. 5000 Series)

SWITCH

Ref.No	Part No.	Description	Remark
S970	1-571-315-11	SWITCH, KEY BOARD (WIDE)	
S971	1-571-315-11	SWITCH, KEY BOARD (TELE)	

****

Ref.No	Part No.	Description	Remark
	*1-627-908-11	MJ-19 BOARD ************	(Ref No. 4000 Series)

CAPACITOR

Ref.No	Part No.	Description	Remark
C690	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C691	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	

DIODE

Ref.No	Part No.	Description	Remark
D690	8-719-106-56	DIODE RD10M-B2	

JACK

Ref.No	Part No.	Description	Remark
J690	1-563-367-21	JACK (EXT MIC)	
J691	1-565-756-21	JACK, SMALL (EXT MIC DC)	

****

Ref.No	Part No.	Description	Remark
	*1-627-905-11	PA-14 BOARD ************	(Ref No. 6000 Series)

DIODE

Ref.No	Part No.	Description	Remark
D990	8-719-938-72	DIODE SB01-05CP	

FUSE

Ref.No	Part No.	Description	Remark
F990	⚠.1-532-778-21	FUSE, MICRO (SECONDARY) 1.6A	
F991	⚠.1-532-778-21	FUSE, MICRO (SECONDARY) 1.6A	

BATTERY HOLDER

Ref.No	Part No.	Description	Remark
J991	1-550-104-32	HOLDER, BATTERY	

When indicating parts by reference number, please include the board name.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

PA-14

Ref.No	Part No.	Description	Remark
		COIL	
L990	1-412-026-11	INDUCTOR CHIP 1UH	
L991	1-412-026-11	INDUCTOR CHIP 1UH	
L992	1-412-026-11	INDUCTOR CHIP 1UH	
		SWITCH	
S990	1-570-870-21	SWITCH, SLIDE (EDID)	
		CONNECTOR	
W991	1-559-927-41	CABLE, FLAT (1.0MM PITCH) 5P	
W992	1-535-658-11	TERMINAL BOARD	

* * *

MISCELLANEOUS

Part No.	Description
1-627-885-11	FP-144 FLEXIBLE BOARD
1-627-886-11	FP-145 FLEXIBLE BOARD
1-627-900-11	FP-146 FLEXIBLE BOARD

* * *

ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
A-7002-319-A	HOLDER ASSY, TITLE (C MODEL)	
*A-7002-375-A	ADAPTOR BLOCK ASSY, BATTERY	
*A-7002-391-A	ADAPTOR BLOCK ASSY, BATTERY	
*A-7002-376-A	CASE BLOCK ASSY, CARRYING	
*A-7002-378-A	CASE BLOCK ASSY, CARRYING	
*X-3725-176-1	CASE (MAIN) ASSY, CARRYING	
*X-3725-177-1	CASE (MAIN) BLOCK ASSY, CARRYING	
1-574-039-11	CORD, CONNECTION	
*3-340-514-01	BAG, PROTECTION	
3-728-667-01	BELT, STRAP	
3-730-801-01	SHEET, INSTRUCTION, CASE ASSY	
3-730-802-01	BRACKET, UPPER LID	
3-730-802-11	BRACKET, UPPER LID	
3-730-803-02	BELT, SHOULDER	
3-730-804-01	COVER, CASSETTE	
3-730-804-11	COVER, CASSETTE	
3-730-805-01	CUSHION (LOWER) (BACK UP)	
3-730-806-01	LID, UPPER	
3-730-806-11	LID, UPPER	
3-730-807-01	CUSHION (NIGHT-SOIL), INNER	
3-730-851-01	RIVET, CHRISTMAS TREE	
*3-764-631-12	INSTRUCTION, DEW CONDENSATION (E MODEL)	
3-786-139-21	MANUAL, INSTRUCTION (U/C MODEL)	
3-786-139-71	MANUAL, INSTRUCTION (E MODEL)	
*3-891-025-01	BAG, PROTECTION	

* * *

ACCESSORIES AND PACKING MATERIALS (KIT)

Part No.	Description
*1-571-163-11	SWITCH, ANTENNA CHANGE (CABLE)
3-728-651-01	FRAME (A), PROTECTION
3-728-652-01	FRAME (B), PROTECTION
*3-728-654-01	CUSHION (UPPER)
*3-728-655-01	CUSHION (INNER)
*3-728-673-01	PAD, UPPER&LOWER
*3-728-677-01	INDIVIDUAL CARTON (U/C MODEL)
*3-728-677-51	INDIVIDUAL CARTON
*3-728-677-31	INDIVIDUAL CARTON (E MODEL)
** AC-V30	AC POWER ADAPTOR
*** RFU-89	RF MODULATER
*** NP-55	RECHARGABLE BATTERY

**MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
***MARK PARTS IS AVAILABLE AS A OPTIONAL ACCESORIES.

When indicating parts by reference number, please include the board name.

HARDWARE LIST

Part No.	Description	Remark
	SCREW	
7-621-255-15	SCREW +P 2X3	
7-621-255-45	SCREW +P 2X6	
7-621-281-15	SCREW +P 2X2	
7-621-772-00	SCREW +B 2X3	
7-627-452-37	SCREW, PRECISION +K 2X5 TYPE1	
7-627-850-17	SCREW, PRECISION +P 1.4X2.5	
7-627-552-07	SCREW, PRECISION +P 1.7X2.5	
7-627-852-18	SCREW, PRECISION +P 1.7X4 TYPE3	
7-627-852-38	SCREW, PRECISION +P 1.7X1.8 TYPE3	
7-627-553-37	PRECISION SCREW +P 2X3 TYPE 3	
7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT	
7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT	
7-685-203-19	SCREW +KTP 2X5 TYPE2 NON-SLIT	
7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
	STOP RING	
7-624-101-01	STOP RING 1.2 (E TYPE)	
7-624-102-04	STOP RING 1.5, TYPE -E	
	TAPPING	
7-685-105-19	TPG +P 2X8, TYPE 2, NON-SLIT	

CCD-SP5/SP7

SONY®
SERVICE MANUAL

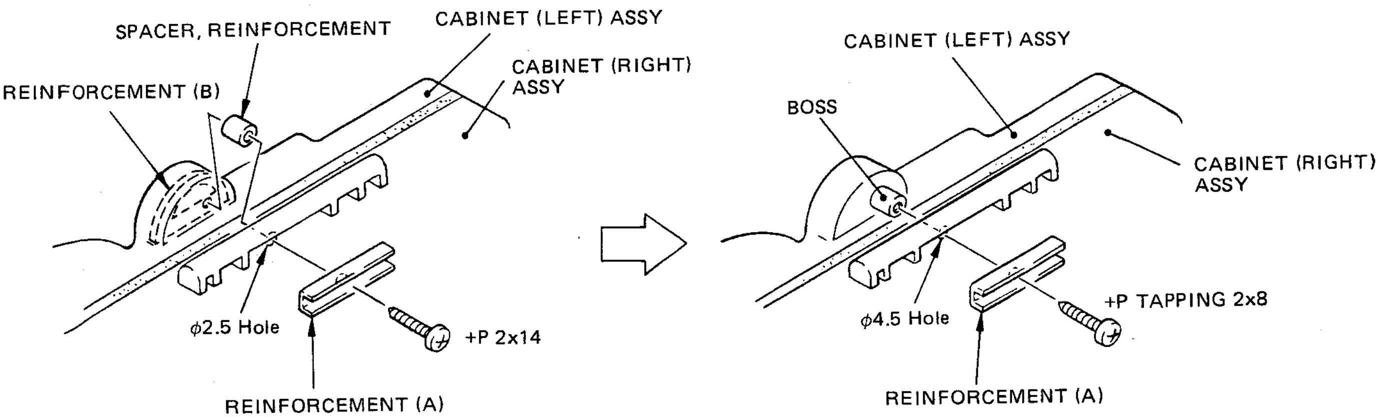
US Model
Canadian Model
CCD-SP7
E Model
CCD-SP5

SUPPLEMENT-1

SUBJECT:
EVF BLOCK PARTIAL MODIFICATION AND OTHERS

This supplement updates the service manual to include production changed.
File this supplement with the service manual.

1. SOME PARTS OF THE CABINET (RIGHT) AND (LEFT) ASSEMBLIES HAVE BEEN CHANGED AS FOLLOWING FIGURE.


SPACER, REINFORCEMENT
CABINET (LEFT) ASSY
CABINET (RIGHT) ASSY
REINFORCEMENT (B)
ϕ2.5 Hole
+P 2x14
REINFORCEMENT (A)
CABINET (LEFT) ASSY
BOSS
CABINET (RIGHT) ASSY
+P TAPPING 2x8
ϕ4.5 Hole
REINFORCEMENT (A)

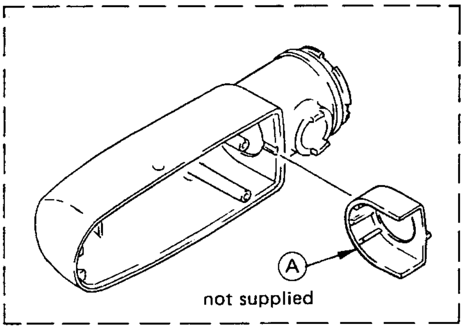
FORMER **NEW**

DESCRIPTION	FORMER	→	NEW
CABINET (RIGHT) ASSY	X-3724-588-1	→	X-3724-588-2
CABINET (LEFT) ASSY	X-3724-591-1	→	X-3724-591-4
REINFORCEMENT (A)	3-730-843-01	→	not changed
REINFORCEMENT (B)	Not supplied	→	deleted
SPACER, REINFORCEMENT	3-730-845-01 (BLACK) -11 (WHITE)	→	deleted
SCREW	3-730-857-01 +P 2x14	→	3-728-668-01 +P TAPPING 2x8

2. EVF CABINET ASSEMBLIES HAVE BEEN MODIFIED AS FOLLOWING FIGURE.

- Distinguishing method between the new type and the former type of EVF Cabinet Assemblies (RIGHT) and (LEFT).

  New Type: Ⓐ and Ⓑ are detachable.
  Former Type: There is no Ⓐ, and Ⓑ is not detachable for it is in a body with EVF cabinet (RIGHT) assembly.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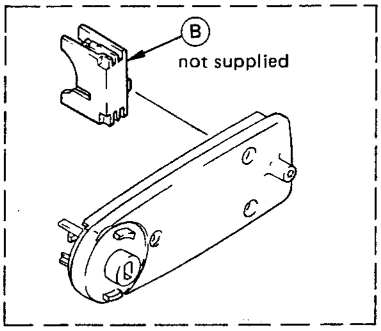
EVF CABINET (LEFT) ASSY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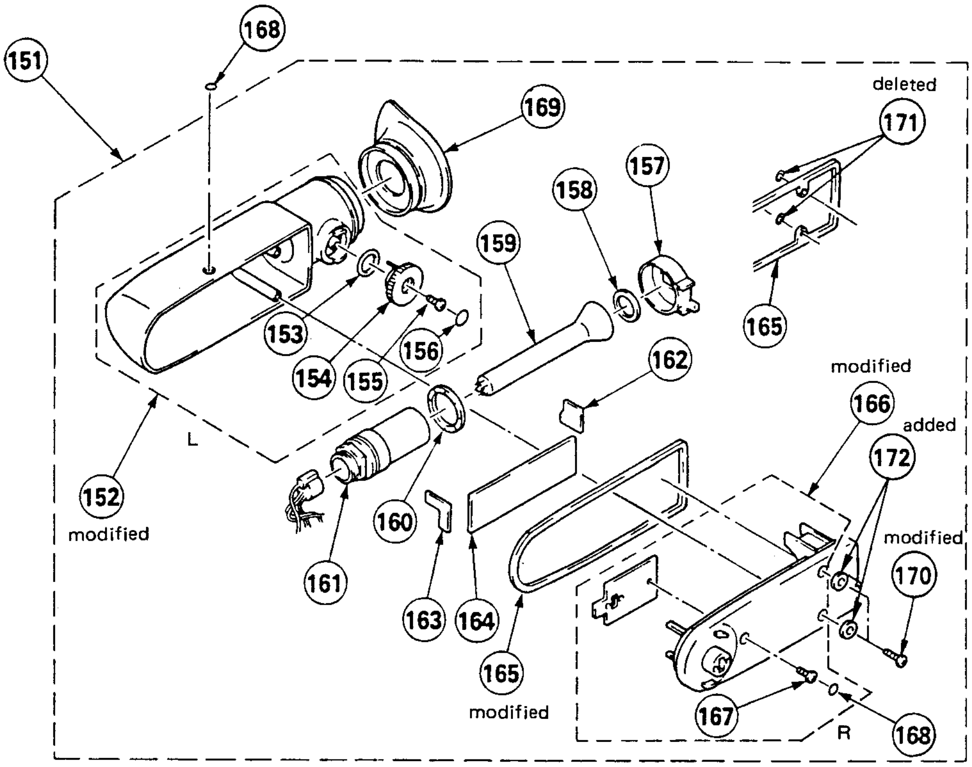
EVF CABINET (RIGHT) ASSY

- Following modification has been occured at the same time above-mentiond change. (Page 54.)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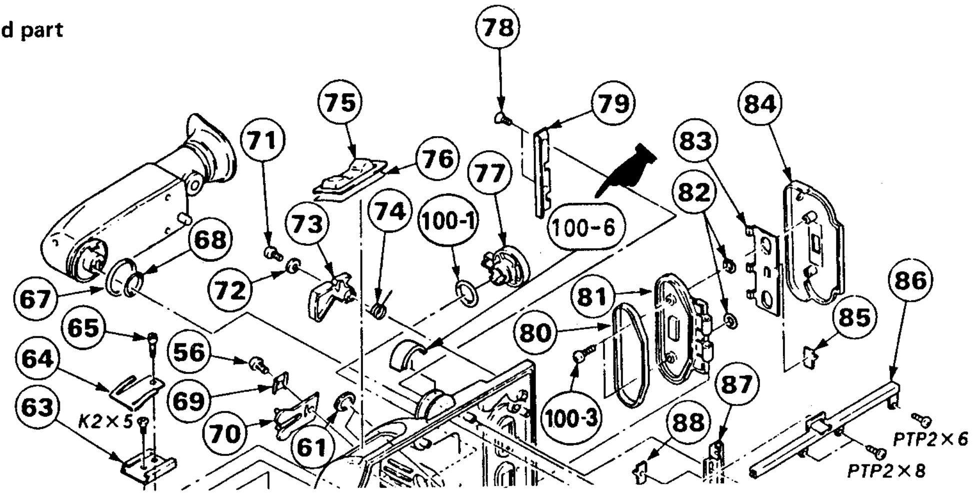
Ref. No.		Former	Description
152	modified	X-3725-116-1	CABINET (LEFT) ASSY, EVF (U/C Model) → X-3725-116-2
152	modified	X-3724-597-1	CABINET (LEFT) ASSY, EVF (E Model) → X-3724-597-3
165	modified	3-728-596-01	PACKING, EVF → 3-728-596-02
166	modified	X-3725-122-1	CABINET (RIGHT) ASSY, EVF (YELLOW) → X-3725-122-3
166	modified	X-3725-161-1	CABINET (RIGHT) ASSY, EVF (WHITE) → X-3725-161-2
170	modified	3-728-668-01	SCREW 2x8 (TYPE2) TAPPING → 3-730-883-01 SCREW 2x10 TAPPING
171	deleted	3-730-840-01	SPACER, LOCK PLATE
172	added		O RING 1.6ϕx3.2ϕ 2-115-882-01

3. LID ASSY, EVF HINGE ADDITION (PAGE 52)

5-2. CABINET (LEFT) ASSEMBLY

☛ : added part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100-3
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K2×5
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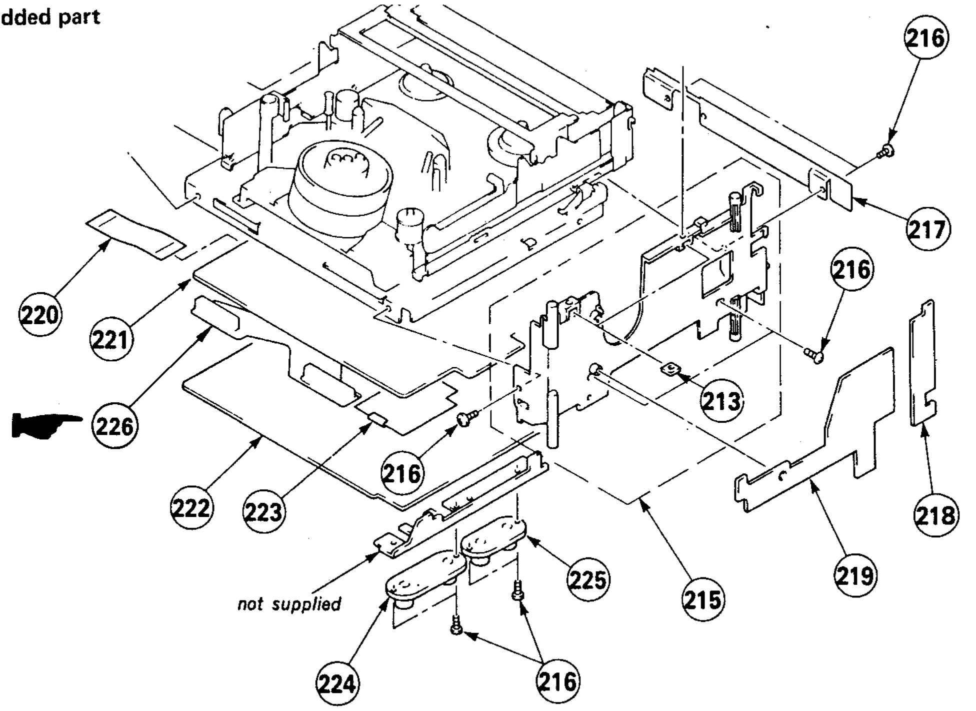
PTP2×6
PTP2×8

100-6 X-3725-163-1 LID ASSY, EVF HINGE

4. FP-118 FLEXIBLE BOARD ADDITION (PAGE 55)

☛ : added part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226 1-626-231-11 FP-118 FLEXIBLE BOARD

5. UPPER DRUM ASSEMBLY PART NUMBER CORRECTION (PAGE 58)

Applicable only for CCD-SP7 Service Manual (9-972-696-11) page 58.
It is already corrected on CCD-SP5/SP7 Service Manual (9-972-742-11).

386 A-7949-130-A DRUM ASSY, UPPER (DGR-20-R)

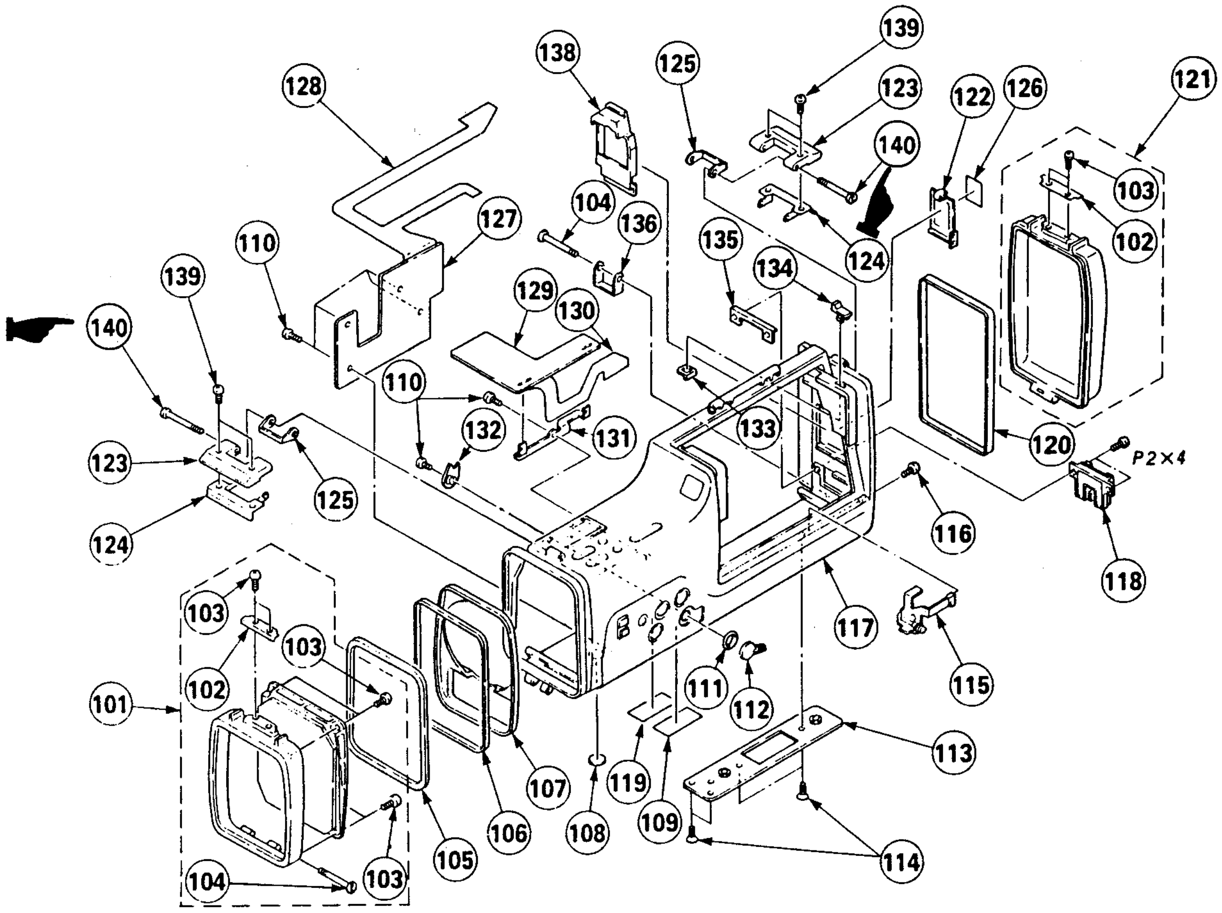
↓

A-7049-130-A DRUM ASSY, UPPER (DGR-20-R)

6. 104, SCREW, FRONT CABINET (3-728-559-01) HAD BEEN USED ON THREE POSITIONS, BUT ON TWO POSITIONS IT HAS BEEN CHANGED TO 140, SCREW, BUCKLE (S) (3-730-890-01). (PAGE 53)

5-3. CABINET (RIGHT) ASSEMBLY

☛ : changed part



No.	Part No.	Description	Remark
101	A-7080-564-A	CABINET BLOCK ASSY, FRONT	102-104
102	3-728-508-01	RETAINER, BUCKLE (S)	
103	3-728-659-01	SCREW (2X5), TAPPING	
104	3-728-559-01	SCREW, FRONT CABINET	
105	3-728-550-01	ORNAMENT, FRONT	
106	3-728-555-01	PACKING, FRONT	
107	3-726-595-01	PLATE, LIGHT TRANSMISSION	
108	3-728-602-01	PLATE, BLIND, ADJUSTMENT HOLE	
109	*3-728-695-01	LABEL, MODEL NUMBER (U/C MODEL)	
109	*3-730-882-01	LABEL, MODEL NUMBER (E MODEL)	
110	3-713-790-01	SCREW (M2X6), TAPPING, P3	
111	3-728-663-01	RING (P 7), O	
112	3-726-585-01	KNOB, AL	
113	3-728-551-01	SCREW, TRIPOD	
114	2-120-001-01	SCREW (2.6X8), TAPPING, (+) (K)	
115	X-3725-146-1	KNOB ASSY, B LOCK	
116	3-728-661-01	SCREW (M2X3)	
117	X-3724-588-1	CABINET (RIGHT) ASSY	122, 138
118	1-535-658-11	TERMINAL BOARD	
119	*3-704-367-01	LABEL (US MODEL)	
120	3-728-556-01	PACKING, BATTERY COVER	
121	A-7080-565-A	COVER (S) BLOCK ASSY, BATTERY	102, 103
122	3-726-587-01	LID, BATTERY CASE	
123	3-726-583-01	BUCKLE (S)	
124	3-728-547-01	STOPPER, BUCKLE (S)	
125	3-728-548-01	BRACKET, BELT	
126	*3-704-256-01	LABEL, CAUTION (U MODEL)	
127	*A-7061-289-A	FC-19 BOARD, COMPLETE	
128	1-627-885-11	FP-144 FLEXIBLE BOARD	
129	*A-7070-718-A	FD-9 BOARD, COMPLETE	
130	1-627-886-11	FP-145 FLEXIBLE BOARD	
131	*3-728-631-01	BRACKET, FD PC BOARD	
132	3-726-568-01	HOLDER, AL KNOB	
133	3-726-571-01	HOLDER, EJECT KNOB	
134	3-726-570-01	KNOB, EJECT	
135	3-728-552-01	BRACKET, TERMINAL	
136	3-728-665-01	BRACKET (LOWER), BELT	
138	3-728-666-01	COVER, LI	
139	2-115-893-01	SCREW (M1.7X2.5)	
140	3-730-890-01	SCREW, BUCKLE (S)	

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Personal Video Group

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V13469

CCD-F40/F340

SERVICE MANUAL

US Model
Canadian Model
CCD-F40
E Model
CCD-F340

Photo: CCD-F40

Handycam
Video 8

This manual contains the SUPPLEMENT-1.

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	NTSC color, EIA standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 1.43 cm/sec. LP: Approx. 0.72 cm/sec. (playback only)
Recording time	SP mode: 2 hours (P6-120)
Playback time	SP mode: 2 hours LP mode: 4 hours (P6-120)
Fast forward time	Approx. 6 min. 30 sec. (P6-120)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 6 × power zoom lens f = 9–54 mm, F1.4 with macro Filter diameter: 46 mm
Auto focus system	Infrared autofocus
Color temperature	Auto: From the light at a tungsten lamp to the light on a slightly overcast day.
Minimum illumination	4 lux
Illumination range	4 lux–100,000 lux (0.4–9,294 footcandles)
Recommended illumination	More than 300 lux (28 footcandles)
Aperture correction	Automatic

Input and output connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced sync negative
Audio output	Phono jack, −10dBs, at output impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5V DC
Video input	Phono jack, 1 Vp-p, 75 ohms unbalaced, sync negative
Audio input	Phono jack, −10 dBs, input impedance more than 47 kilohms
Earphone jack	Minijack, 8-ohm impedance
Remote jack	Stereo mini-minijack
MIC jack	Minijack, −66 dBs, low impedance With 2.5–3 V DC output, impedance 6.8 kilohms
Microphone power output jack	Special minijack, 5 V DC

— Continued on next page —

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

Display in the viewfinder

Mode and caution indicators
Mode: REC/STBY
- BACK LIGHT
- ZERO MEM

Caution: BATTERY
- DEW
- TAPE END
- CASSETTE
- CAUTION

Time/date indication
Title color indication
Shutter speed indication

General

Power requirements	Battery compartment 6 V/7.5 V
Power consumption	6.5 W (camera recording) including the viewfinder
Installation	Vertically
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to +140°F)
Dimensions	Approx. 116 × 127 × 302 mm (w/h/d) ($4^{5}/_{8}$ × 5 × 12 in.)
Weight	Approx. 1.1 kg (2 lb 7 oz) excluding the battery and cassette
Microphone	Electret condenser microphone, omni-directional monaural type
Supplied accessories	Lithium battery CR2025 (1) Shoulder strap (1)

Precautions for replacement of CCD imager block.

- After the CCD imager block has been replaced, perform the entire adjustments of the camera section.
- CCD imager is structurally in case of being broken down by static electricity. For this reason, take care to handle it as well as MOS IC. Moreover, care should be taken for dust not to be stuck on the light reseiving section and for strong light not to get into there.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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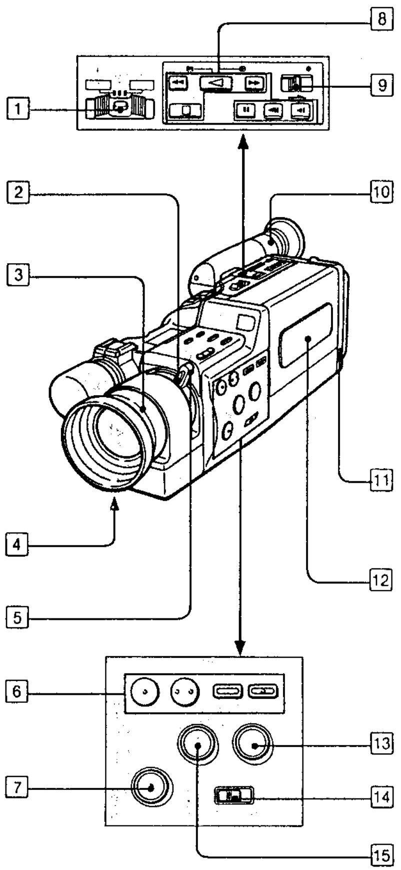
SUPPLEMENT-1

SECTION 1
GENERAL

1-1. LOCATION AND FUNCTION OF PARTS AND CONTROLS

A-1



For details on the use of each control, refer to the pages indicated in the circle.

A-1

1 **POWER switch**
CAMERA: For camera recording
VTR: For playing back or editing tapes
OFF: Power off

2 **Macro set button ⓬**

3 **Focus ring ⓾**

4 **START/STOP button**
Used for low angle recording.

5 **Zoom lever ⓬**

6 **SUPERIMPOSE buttons ⓭**
Used to record the title.
TITLE 1 button
TITLE 2 button
MEM (memory) button
COLOR button

7 **BACK LIGHT button ⓫**

8 **Tape transport buttons**
◀ (playback)
◀◀ FF (fast forward)
▶▶ REW (rewind)
■ (stop)
❚❚ (pause)
◀❚❚ (frame-by-frame)
◀❚ (slow)

9 **● REC (recording) switch**
Slide in the direction of the arrow.

10 **Viewfinder ❽**
The picture being recorded or played back can be monitored in monochrome here. Also, data such as caution indicators and function mode are displayed on the viewfinder screen.

11 **BATT EJECT (battery eject) knob ❻**

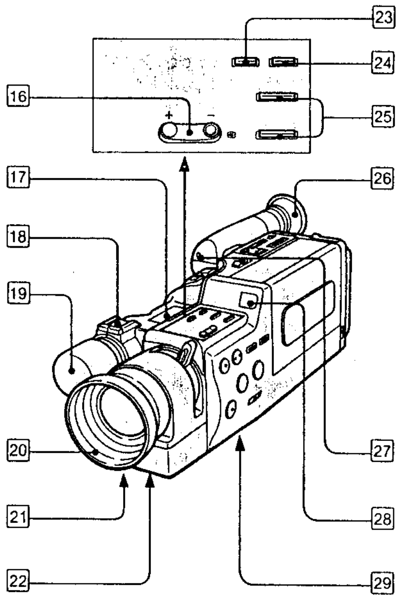
12 **Cassette holder**

13 **SHUTTER SPEED button ⓫**
Used to select the shutter speed.

14 **AUTO LOCK switch**
Normally set to the left AUTO LOCK position.

15 **FOCUS button ⓾**
Used for manual focusing.

A-2



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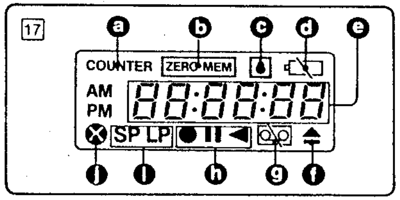

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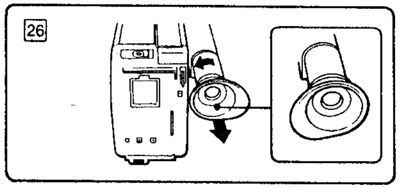


A-2

16 **EDITSEARCH button ❾**

17 **Display window ❽**
ⓐ COUNTER indicator
ⓑ ZERO MEM (memory) indicator
ⓒ Moisture condensation inside the unit.
ⓓ Blinks when the battery is weak.
ⓔ Indicates the time or the tape counter.
ⓕ Blinks when moisture has condensed on the tape, when the tape approaches its end during camera recording.
ⓖ Lights steadily when no cassette is inserted. Blinks when the tape approaches its end.
ⓗ Tape operation mode indicators
ⓘ Tape speed indicator
ⓙ Lights when the slit in the head is clogged.

18 **Accessory shoe**
Attach an optional external microphone, video light, etc.

19 **Built-in microphone (monaural)**

20 **Lens hood**

21 **Infrared beam detector**
The infrared beam reflected from the object to be shot is received here during auto focusing. Do not cover here.

22 **Infrared beam emitter**
Transmits an infrared beam toward the object to be shot during auto focusing. Do not look into it for a long time when recording with auto focusing. Do not cover here.

23 **ZERO MEM (zero memory) button**
Used to memorize the counter zero point.

24 **RESET button**
Press to reset the counter to zero.

25 **DATE and TIME SET buttons ⓭**
Press to display or turn off the date or time.

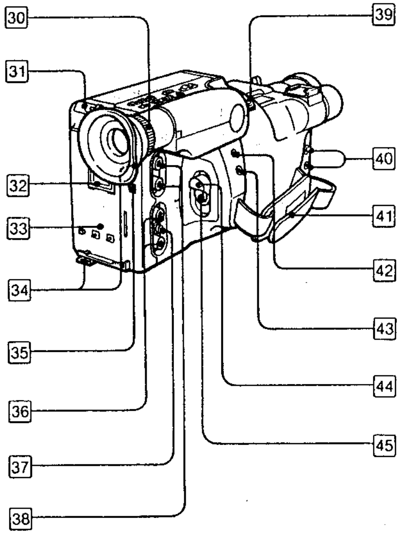
26 **Eyecup**
The eyecup is attached for the right eye.
For the left eye, detach the rubber eyecup and attach it as illustrated.

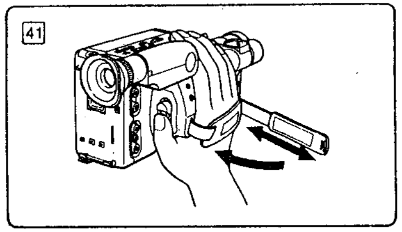
27 **Camera recording/battery lamp**
Lights during camera recording. It blinks when the battery is exhausted.

28 **White balance sensor**
This is the sensor for auto white balance adjustment.
During recording, do not cover the sensor.

29 **Tripod receptacle**

A-3





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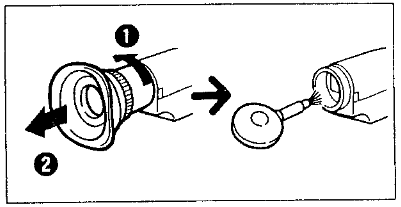


A-3

30 Viewfinder lens adjustment ring
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.

31 Cassette eject button

32 Lithium battery compartment ❼

33 Battery mounting surface

34 Hooks for shoulder strap
Attach a shoulder strap.

35 EDIT switch ⓲
Normally set it to the upper position. When editing tapes, set to EDIT.

36 VIDEO/AUDIO OUT (output) jacks (phono jacks)

37 RFU DC OUT (RFU adaptor DC output) jack (special minijack)
Supplies power to the RFU-89UCA RFU adaptor.

38 VIDEO/AUDIO IN (input) jacks (phono jacks)

39 Power zoom button ⓬

40 MIC jack and DC OUT (microphone power output) jack
Connect an external microphone.
The MIC jack accepts Sony "plug-power" microphones and supplies power to them.

41 Grip strap
Adjust the length so that your thumb can easily manipulate the START/STOP button.

42 REMOTE connector (stereo mini-minijack)

43 ⓟ (earphone) jack (minijack)

44 STANDBY switch
Slide up to set the unit to recording pause mode.

45 START/STOP button
Press to start and stop camera recording.

To remove dust from inside the viewfinder A-4
Detach the eyecup as illustrated and clean the surface of the Braun tube with a blower.

1-2. POWER SOURCES

Selection of Power Sources

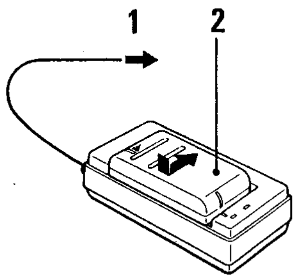
This manual shows the operations on one of the following power sources.

		Power source	**Accessory to be used**
Place	Indoors	House current	AC power adaptor AC-V30 or AC-V55
	Outdoors	Battery pack	Battery pack NP-55 or NP-77
	In the car	12 V or 24 V car battery	AC power adaptor AC-V55 and car battery cord DCC-16AW

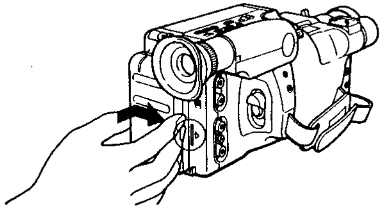
Notes on power source
- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted cassette tape. If this is done by accident, supply the power again immediately and turn on the power switch.
- Be careful not to let any metal object touched on the metal part on the battery pack or AC power adaptor. When the battery pack is not be used, keep it in its case.

Optional Accessories for Charging
- **AC-V55 AC power adaptor**
  Two battery packs can be charged simultaneously.
- **BCA-70 or BCA-80 battery charge adaptor, ACP-88 AC pack and NPA-55 battery adaptor**
  For charging, insert an NP-55 into the NPA-55.

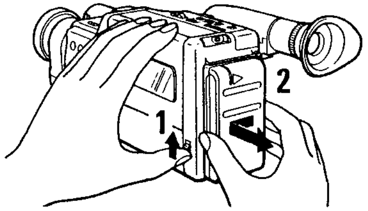
B-1



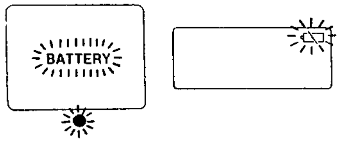
B-2



B-3



B-4



Battery Pack — NP-55 or NP-77

First, charge the battery pack B-1
Use the AC-V30 AC power adaptor.
The charging time is about 1 hour for an NP-55 battery pack, or about 2 hours for an NP-77 battery pack.

1 Connect the AC-V30 to a wall outlet.
2 Attach the battery pack to the AC-V30.
Align the grooves on the battery pack with those on the AC-V30, and while pressing the battery pack slide it as illustrated.

To attach the battery pack to the video camera recorder B-2
Align the right side of battery pack with the white line on the recorder, and while pressing the battery pack, slide it to the right.
Make sure that the battery is fitted completely to the mounting surface. Imperfect fit may damage the projections on the recorder.

To remove the battery pack B-3
While pressing the BATT EJECT knob in the arrow direction, slide and pull out the battery pack as illustrated.

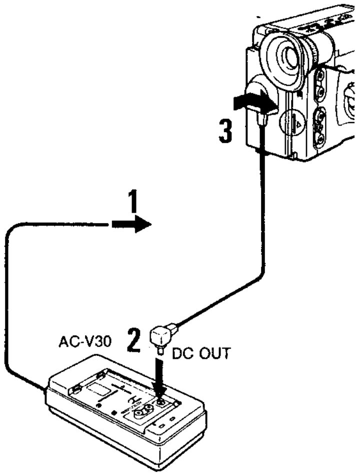
Battery life
A fully-charged NP-55 battery pack provides approximately 40 minutes of continuous camera recording, and an NP-77 provides approximately 80 minutes of continuous camera recording.

Notes
- The video camera recorder consumes power even in the recording pause mode. When recording short scenes using the recording pause mode, the battery life is less than half that of continuous recording.
When recording is not to be started soon, turn off the power with the STANDBY switch.
- If the battery pack is not fully charged or if it is used in a cold place, its operating time is also shortened.

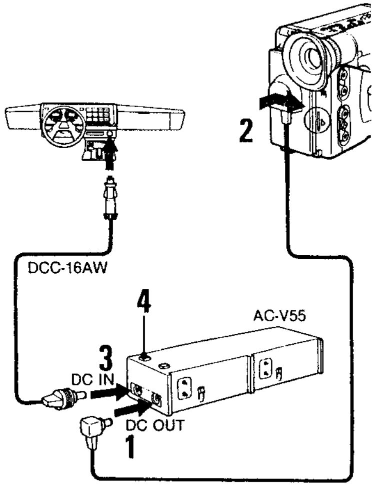
When the video camera recorder is not in use, remove the battery pack.
If the battery is installed, even if the POWER switch is set to OFF, a very small amount of electric current flows.

When the battery becomes weak B-4
The BATTERY indication and red lamp blink in the viewfinder and the ⌂ indication blinks in the display window.
Replace the battery pack with the fully charged one.

B-5



B-6



Using the NP-22 battery pack
A fully-charged NP-22 battery pack can operate this unit for approximately 60 minutes. For using the NP-22, an optional NPA-22 battery adaptor is necessary.

House Current — Using AC Power Adaptor B-5

1 Connect the AC power adaptor to a wall outlet.
2 Insert the connecting cord supplied with the AC-V30 AC power adaptor into the DC OUT jack on the AC power adaptor.
3 Align the right side of the connecting plate with the white line on the recorder, and while pressing the connecting plate, slide it to the right.

To remove the connecting plate for the AC power adaptor from the video camera recorder
While pressing the BATT EJECT knob on the recorder, slide and pull out the connecting plate.

The optional AC-V55 AC power adaptor can also be used to operate this recorder on house current.

Car Battery B-6

Use the DCC-16AW car battery cord and the AC-V55 AC power adaptor.

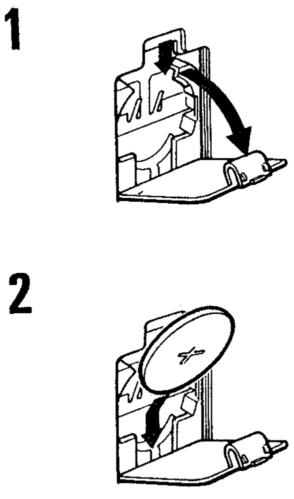
1 Insert the connecting cord supplied with the AC-V55 into the DC OUT jack on the AC-V55.
2 Align the right side of the connecting plate with the white line on the recorder, and while pressing the connecting plate, slide it to the right.
3 Connect the DCC-16AW car battery cord to the DC IN jack on the AC-V55 and to the cigarette lighter socket of a car (12 V or 24 V).
4 Press the POWER switch on the AC-V55.

After using, press the POWER switch on the adaptor again.

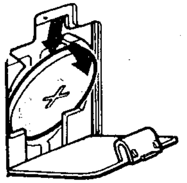
To remove the connecting plate from the video camera recorder
While pressing the BATT EJECT knob on the recorder, slide and pull out the connecting plate.

The optional DCP-55 DC pack (supplied with a car battery cord) can also be used to operate this recorder on a 12V or 24V car battery.

C-1



C-2



Lithium Battery C-1

To insert the lithium battery
This unit uses a lithium battery to activate the clock and to keep a title in memory. Before operating the unit for the first time, install the supplied lithium battery:

1 Open the cover of the lithium battery compartment on the battery mounting surface.
2 Install the supplied CR2025 lithium battery with the ⊕ side facing out.
3 Close the cover.

To remove the lithium battery C-2
Press the side of the battery in the direction as indicated for installation.

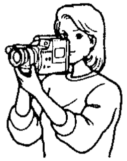
Lithium battery life
Approximately 1 year in normal operation.
When the lithium battery becomes weak, the time indication will blink on the viewfinder screen for about 7 seconds.
In this case, replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.

Notes on lithium battery
- Keep the lithium battery out of the reach of children. Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Do not break up the battery nor throw it into a fire, which might cause it to explode. Carefully dispose of the used batteries.

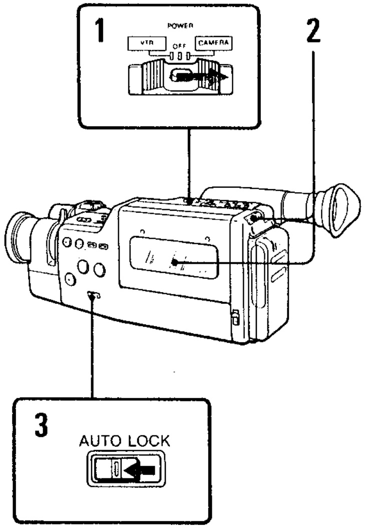
WARNING
Battery may explode if mistreated.
Do not recharge, disassemble or dispose of in fire.

1-3. EASY CAMERA RECORDING WITH AUTOMATIC ADJUSTMENT

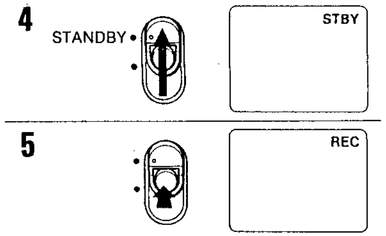
F-1



F-2



F-3



How to Record

Hold the camera recorder as in the illustration.
If your nose touches the recorder, adjust the angle of the viewfinder. F-1

F-2

1 While pressing the small button, set the POWER switch to CAMERA.
2 Insert the cassette.
3 Set the AUTO LOCK switch to AUTO LOCK.
4 Slide the STANDBY switch up. F-3
The unit will enter the recording pause mode.
5 Press the START/STOP button.
Recording will start.

Check on the viewfinder screen
STBY: Displayed during recording pause mode.
REC: Displayed during recording.

To stop recording
Press the START/STOP button again.
The unit will enter the recording pause mode.
Avoid rough handling or mechanical shock to the unit. A smooth transition between scenes may not be made.

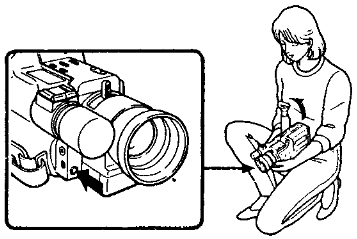
To check the last portion of the previous recording
1 Set the recorder in recording pause mode by pressing the START/STOP button.
2 Press the – EDITSEARCH button momentarily.

The last few seconds of the recorded portion are rewound and then the recorded picture is monitored on the viewfinder screen. The unit then enters the recording pause mode.

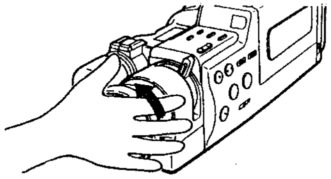
If the picture has not been recorded
The video head may be contaminated. Clean the heads using the Sony V8-25CL video head cleaning cassette.

After using
Slide the STANDBY switch down and set the POWER switch to OFF. (You need not press the center button when setting the switch to OFF.)

F-4



F-5



F-4

For low angle recording
The viewfinder can be turned 90 degrees up.
1 Slide the STANDBY switch up.
2 Press the START/STOP button on the front.

When attaching the lens hood, filter or conversion lens, hold the focus ring.

When removing, press it with the palm of your hand and turn it counterclockwise. F-5

Note on power source
If the POWER switch is moved during recording, the tape will stop.

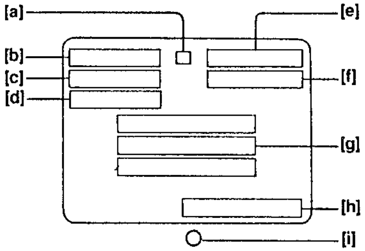
Notes on light sources
- Should you shoot a subject in bright conditions such as sunlight just after shooting in a dark place, the picture may not appear on the viewfinder screen. In this case, move the camera away from the subject to resume the normal condition.
- A vertical band may appear when a subject such as a candle flame or a light is shot against a dark background.

Notes on playback on another VCR
- To view the picture which has been recorded on this unit, set the monitor switch of the recorder for playback to the STD (standard) position.
- When recording on this unit using a tape on which PCM stereo sound has previously been recorded, set the monitor switch of the video cassette recorder for playback to the STD (standard) position. Otherwise, the sound may not be heard or may be distorted.

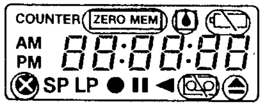
Notes on automatic adjustment
- During recording, do not cover the white balance sensor.
- During recording with auto focusing, do not turn or stop the focus ring forcibly.
- Keep the lens and the white balance sensor clean.

Under certain conditions, auto focusing will not operate properly (see page 10).

F-6



F-7



Indications Inside the Viewfinder and in the Display Window F-6 F-7

[a] **White mark**
The FOCUS switch has been set to the manual condition.
[b] **Shutter speed** (see page 11.)
[c] **Title color** (see page 14.)
[d] **BACK LIGHT**
The BACK LIGHT button has been pressed (see page 11.)
[e] **STBY**
Recording is momentarily stopped (recording pause mode).
REC
Recording is going on.
[f] **ZERO MEM**
The ZERO MEM button has been pressed.
[g] **BATTERY**
Weak battery.
CAUTION
The unit cannot function normally.
DEW
Moisture condensation inside the unit.

CASSETTE
No cassette has been inserted or the safety tab of the inserted cassette is slid out.
TAPE END
The tape is at its end.
[h] **Date or time** (see page 13.)
[i] **Camera recording/battery lamp**
Lights during camera recording. It blinks when the battery is exhausted.

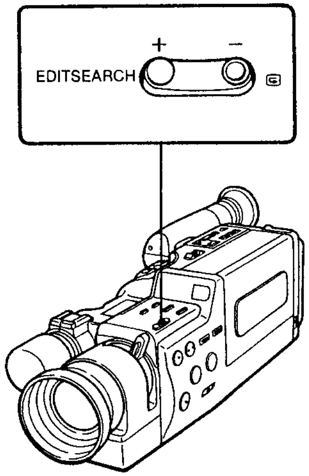
Indicators for caution

Display window F-7	Inside the viewfinder F-6
🔋	BATTERY
📼	TAPE END
⏏	CASSETTE
💧	DEW
⊗	CAUTION

Indicators for the setting of the switch

Display window F-7	Inside the viewfinder F-6
	BACK LIGHT
ZERO MEM	ZERO MEM
	■

F-8



Instant Playback on the Spot F-8

You can monitor the picture just recorded on the viewfinder screen.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up.
3 Press the "–" side of the EDITSEARCH button to rewind the tape.
4 Press the "+" side of the EDITSEARCH button to view the playback picture.

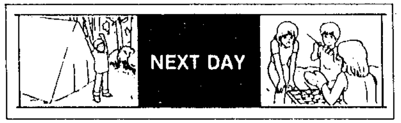
During Recording, to Record Again on the Previous Recorded Portion

1 Slide the STANDBY switch up.
2 Locate the point from which the recording is to begin again by monitoring the picture on the viewfinder screen.
   ❶ Press the "+" side of the EDITSEARCH button to advance the picture at a normal playback speed, or the "–" side to reverse the picture.
   ❷ At the desired point, release the EDITSEARCH button.
   The unit will be set to recording pause mode.
3 Press the START/STOP button to start recording.

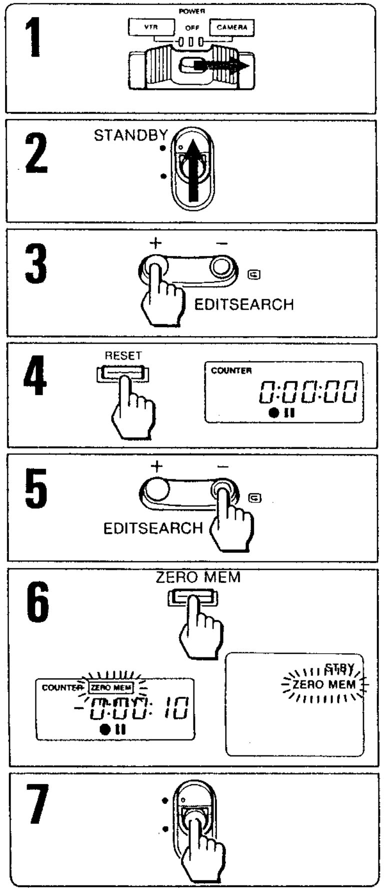
Smooth recording can be made even if the recording is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed. But, if the cassette has been removed, proceed as above.

1-4. INSERT RECORDING 1 ● Using EDITSEARCH button

G-1



G-2



You can insert (record) video and audio simultaneously from the camera onto any recorded tape. G-1

Operation G-2

Monitor the picture being inserted on the viewfinder screen.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up to set the unit to recording pause mode.
3 Keep pressing the "+" or "–" side of the EDITSEARCH button and release the button at the point where the insert should **end.** The unit will be set to recording pause mode.
4 Display the counter in the display window and press the RESET button. The counter is reset to zero. (For an accurate ending point, press the RESET button immediately after the EDITSEARCH button is released and while the still picture is displayed.)
5 Keep pressing the "–" side of the EDITSEARCH button and release the button at the point where the insert should **begin.**
6 Press the ZERO MEM button. The insert ending point is stored in memory.
7 Press the START/STOP button. Insert recording will begin.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

To insert the date or time
Follow steps 1 through 6 above, press the DATE or TIME button to display the date or time indication on the viewfinder screen and then press the START/STOP button.

Notes on ZERO MEM Mode
ZERO MEM mode is cancelled automatically in the following cases.

- When an insert recording is completed.
- When the position of the POWER switch is changed.
- When the power is turned off.
- When the cassette is ejected.

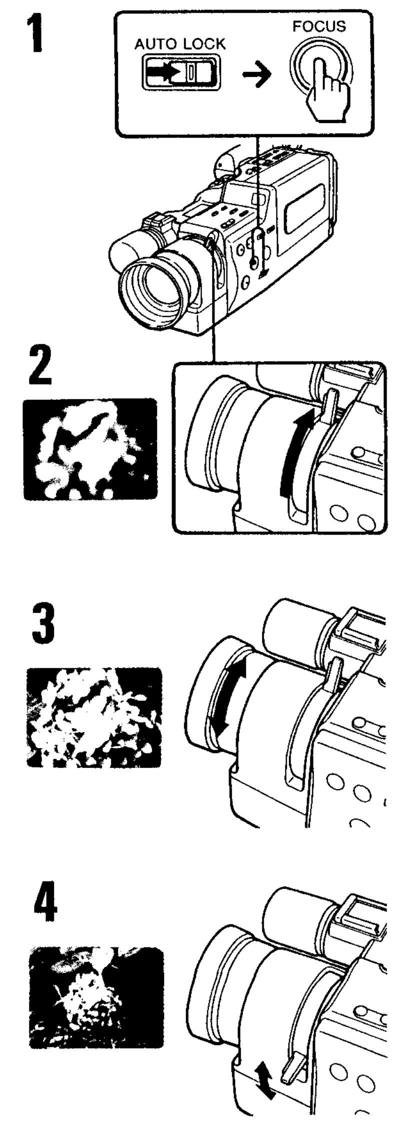
To restore it, press the ZERO MEM button again.

Notes

- When recording pause mode lasts for approximately 5 minutes, pause mode will be automatically released and the unit will be set to stop mode.
- When the inserted tape is played back, the picture may be distorted at the end of the inserted program.

1-5. MANUAL FOCUSING

H-1



Use manual focusing when shooting subjects difficult to focus automatically (listed below).

H-1

1 Set the AUTO LOCK switch to the right and press the FOCUS button.
2 Turn the manual zoom lever to the telephoto position (54) to make the subject as large as possible in the viewfinder.
3 Turn the focus ring to achieve sharp focus.
4 Set the desired shot length using the manual zoom lever.

Some helpful hints

- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus by setting the zoom lever to the wide-angle position and the focus ring to 2 m, regardless of the distance between the subject and the recorder.
- When shooting in low light situations such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles, after focusing in telephoto.
- The figures on the focus ring indicate the distance between the subject and the lens surface.
- Recommended illumination of this unit is more than 300 lux (28 footcandles). If shooting is done indoors or under other circumstances where light is insufficient, video lights must be used for best results. Under adequate light condition, the depth of field in proper focus is wider and a sharper picture will be recorded.

Poor Conditions for Auto Focusing H-2

To shoot subjects listed below you must use manual focusing.

[a] **Black objects which absorb the infrared beam**
Ex. dark curtains or shade

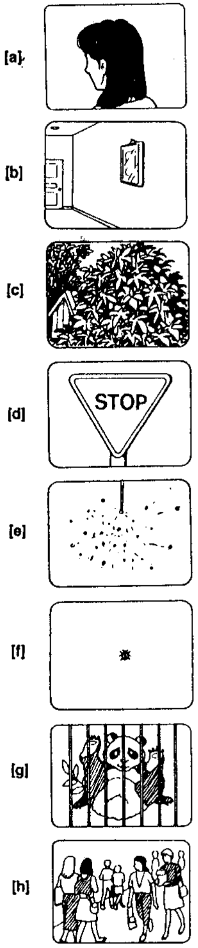
[b] **Objects in which the infrared reflection disperses**
Ex. a smooth slanting surface (Auto focusing functions when the camera is aimed squarely at the subject.)

[c] **Objects in which the infrared reflection is not sufficient**
Ex. bushes, grass or plants in the telephoto position

[d] **Objects in which the infrared beam is reflected too much**
Ex. traffic signs, a white wall, a mirror, or a subject through plate glass

[e] **Objects not solid**
Ex. fireworks, candle flame or smoke

H-2



[f] **Exteremely small objects which do not cover more than 1/10 of the viewfinder's area**
Ex. insects

[g] **When there are other objects between the shooting object**
Ex. an animal inside a cage or baby inside a cot

[h] **Moving objects**
Ex. a crowd or sports with lots of movement

- **Objects which emit infrared beams themselves**
  Ex. automatic doors or fluorescent lights
- **Objects 10–60 meters (33–200 feet) away from the recorder**

Other Uses of Manual Focusing

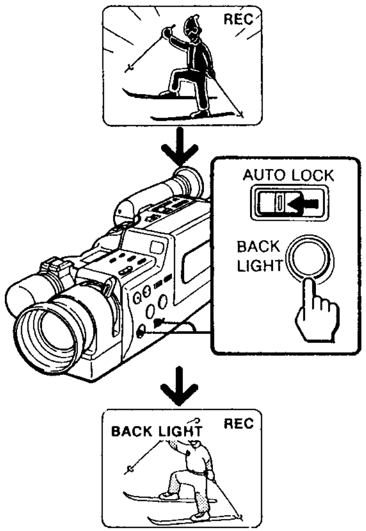
- When using special effects lenses or filters
- When shooting still subjects on a tripod
- To save battery wear
  (When the AUTO LOCK switch is set to AUTO LOCK, the auto focusing operates to move the focus ring automatically even in recording pause mode. This causes the battery to wear continuously.)
- For focusing in close-up shooting, see page 12.

Auto focusing system of this camera recorder
This recorder adjusts focus automatically by emitting an infrared beam at the objects to be shot and then detecting the reflected beam. When the subject is approximately 3 meters away from the camera recorder, the focus is sharpest in the center of the screen. The camera recorder has the tendency, however, to focus a bit lower to the right when the subject is within 3 meters, and a bit higher to the left when the subject is more than 3 meters away.

Note
As the auto focusing of this camera recorder utilizes an infrared beam, it might malfunction when you use the camera recorder near another equipment that also emits an infrared beam such as a TV or VCR remote commander, or another camera recorder that uses an infrared beam for auto focusing.
It might also cause malfunctioning of such equipment.

1-6. BACK LIGHT ADJUSTMENT I

I



This unit adjusts the iris automatically. However, when shooting a subject that is backlit, set the AUTO LOCK switch to the right and press the BACK LIGHT button.
The BACK LIGHT Indication appears when the BACK LIGHT button has been pressed.

After shooting that particular scene, be sure to press the BACK LIGHT button again to release it. Otherwise the recorded picture will be too bright.
The BACK LIGHT Indication goes out.

Note
The function will be released once the POWER switch is set to OFF.

Automatic White Balance Function

The automatic white balance function allows the unit to record an image with natural color tones in most kinds of light.
This insures that white will always recorded as white regardless of the light source.

Notes

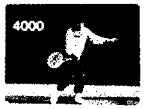
- The auto white balance may not function under the following conditions.
  - Insufficient light
  - When lighting conditions change rapidly
  - When the camera is in a different light condition from the recorded subject
    ex. when the subject is under a spotlight
    when the subject is outdoors and the camera is indoors
  - Special light sources such as a natrium lamp
- Do not cover the white balance sensor.

1-7. SHUTTER SPEED ADJUSTMENT

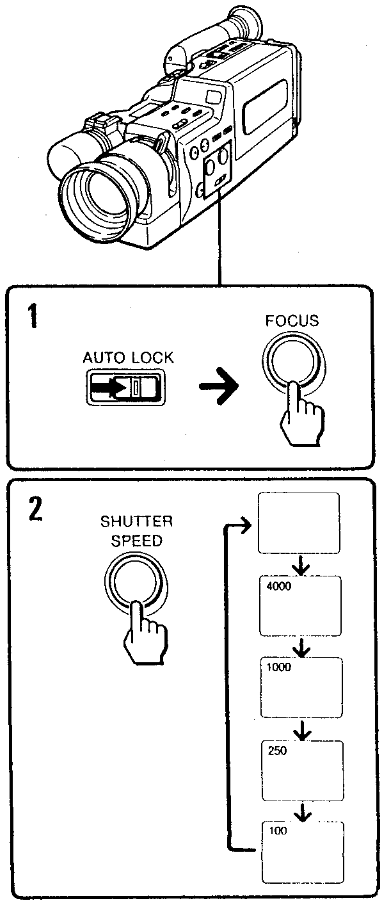
When a fast-moving subject is recorded at a normal shutter speed, its still picture may not be seen when played back J-1. This can be improved by increasing the shutter speed J-2
The shutter speed of this unit can be selected from five speeds, 1/60 (normal speed), 1/4000, 1/1000, 1/250, 1/100.
However, when the shutter moves fast, it will not allow enough light to come into the lens, so the picture will be dark. Therefore, when recording at a high shutter speed, record in a brighter place than usual.
Choose an appropriate shutter speed according to the place and situation.
See the chart below for examples.

J-1

J-2



J-3



Example use	Recommended shutter speed
• On clear days, recording golf or tennis scenes (To view the hit ball clearly in the pause mode, set to 1/4000) • Recording the skiers	1/4000 or 1/1000
• On overcast days, recording a moving merry-go-round or jet-coaster • Recording outdoors from inside a vehicle (for stable shooting)	1/250
• Instead of the ND2 filter (To reduce the exposure level to approx. 1/2) • Recording indoors (for stable shooting)	1/100

J-3

1 Set the AUTO LOCK switch to the right and press the FOCUS button.
2 Press the SHUTTER SPEED button repeatedly until the desired shutter speed indication appears on the viewfinder screen.
Each time the SHUTTER SPEED button is pressed, the indication changes:
No indication → 4000 → 1000 → 250 → 100
(1/60) (1/4000) (1/1000) (1/250) (1/100)

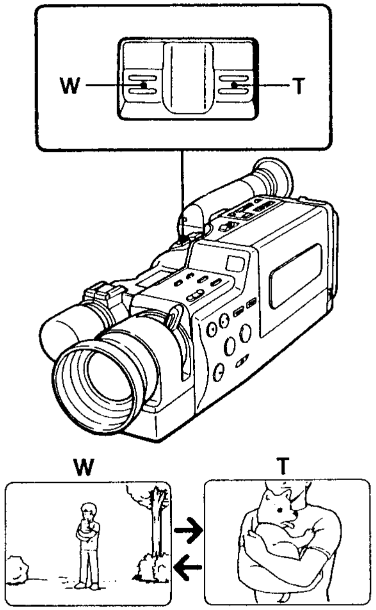
Auto focus will not function is this case.
When shooting, use manual focusing.

Notes

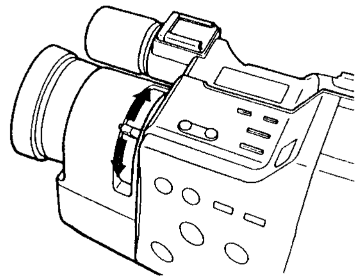
- When shutter speed 1/250 or more is selected, recording must be done under sunlight or video light.
- When the recording is done under a light discharged tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, the brightness of the recorded picture may vary ("flicker").
  If flickers of fluorescent lamps affect the recording in 50 Hz areas, set the shutter speed to 1/100.
- When the shutter speed is changed during a camera recording of a TV screen, the brightness of the recorded picture may vary.
- When a very bright object is shot at a faster shutter speed, a light, vertical, belt-like line ("smear") may appear on the screen.

1-8. ZOOMING

K-1



K-2



The size of the subject in the scene can be changed.

Power Zoom K-1

— for smooth and constant zooming

Press the T side of the power zoom button for telephoto and the W side for wide-angle.
The zoom ring will move automatically.

Manual Zoom K-2

— to create a dramatic effect

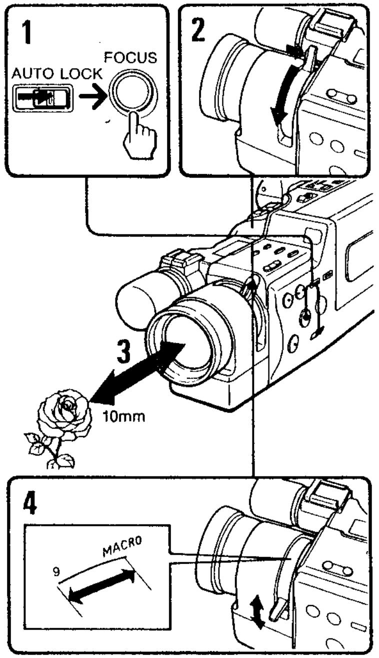
Turn the manual zoom lever upward for telephoto and downward for wide-angle.

For more zooming effect

- Use an optional conversion lens (VCL-1546A or VCL-0746A).
  Auto focus, however, will not function in that case.
- The focal length of this unit is 9 mm to 54 mm. Converted into the focal length of a 35 mm camera, this means approximately F-48 mm to 288 mm.

1-9. CLOSE-UPS (MACRO) L

L



Even tiny objects can literally fill the screen for dramatic close-up effects.
Remove the lens hood before operation.

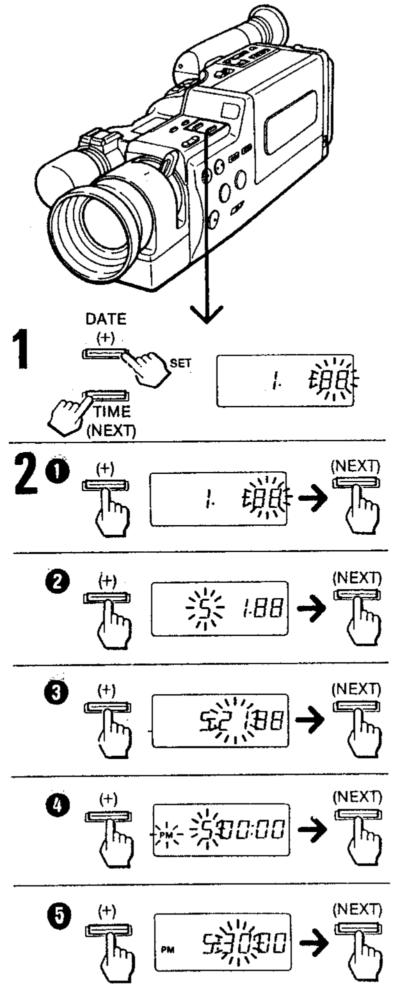
1. Set the AUTO LOCK switch to the right and press the FOCUS button.
2. Turn the zoom lever to the MACRO position, pressing the orange macro set button.
3. Bring the recorder as close as necessary to obtain the desired subject size.
   The subject can be as close as approximately 10 mm ($^{13}/_{32}$ in.) from the lens surface.
4. Turn the zoom lever within the MACRO range in orange to focus sharply.

Notes

- Auto focusing does not function properly in macro shooting.
- If the subject is closer than 10 mm, it cannot be brought into focus.
- When shooting in macro, the depth of field is very shallow, so pay attention to focus. To keep the subject in focus, use a tripod or monopod.
- Zooming is not possible during macro recording. To change the size of the subject, move the camera recorder closer or further away.

1-10. RECORDING DATA OR TIME

M-1



Once the date and the current time are adjusted, the date or time can be recorded together with the picture.

Before setting the date and time, make sure that the battery pack and lithium battery are installed.

To Set Date and Time M-1

1 Press the DATE and TIME SET buttons simultaneously **for more than 3 seconds.**
The date indication will appear in the display window (date/time setting mode).
The DATE button now functions as the + button and the TIME button functions as the NEXT button.

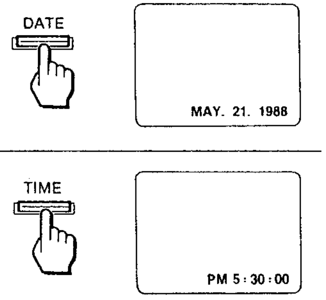
2 Adjust the ❶ year, ❷ month, ❸ day, ❹ hour and ❺ minute in sequence, following the illustration.
First adjust the blinking digits with the + button, and then press the NEXT button.
After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

The clock starts operating. There is no need to readjust the date and time as long as the lithium battery remains.

To clear the time indication from the display
Press the TIME SET (NEXT) button again.

The + button can be pressed in two ways
- When you keep the button pressed, the digits will advance continuously.
- When you press and immediately release the button, the digits will advance by one.

M-2



To check the preset date and time
Press the DATE or TIME SET button in the recording pause mode. When the same button is pressed again, the indication goes off.

To readjust an incorrect date or time
Set the unit to date/time setting mode and press the NEXT button repeatedly until the incorrect digit blinks. Correct it with the + button and press the NEXT button. After adjusting the minute digits, press the NEXT button at the same time with an anounced time signal.

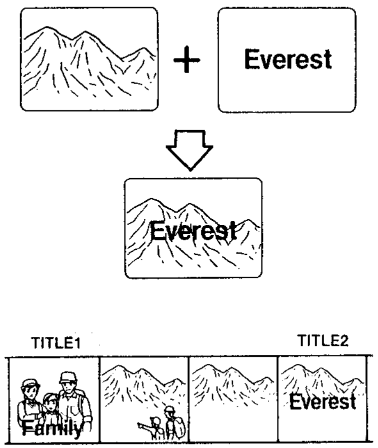
To Record the Date or Time M-2

During camera recording or in recording pause mode, press the DATE or TIME SET button to display the date or time on the viewfinder screen.
The date or time being displayed will be recorded together with the picture.

To stop recording the date or time
Press the DATE or TIME SET button again. The picture recording will continue.

1-11. RECORDING A TITLE

N-1



Before recording, memorize a title or figure. The memorized title or figure is superimposed onto the picture being recorded. N-1

- Two kinds of titles or figures can be memorized.
- The color of the title or figure can be selected from 8 colors.

Preparations

To make a desired title card
Use a white and plane card and draw the title on it with a deep color (black is recommended for the best result) in thick letters.
If contrast is clear, a signboard can be memorized like the title card.

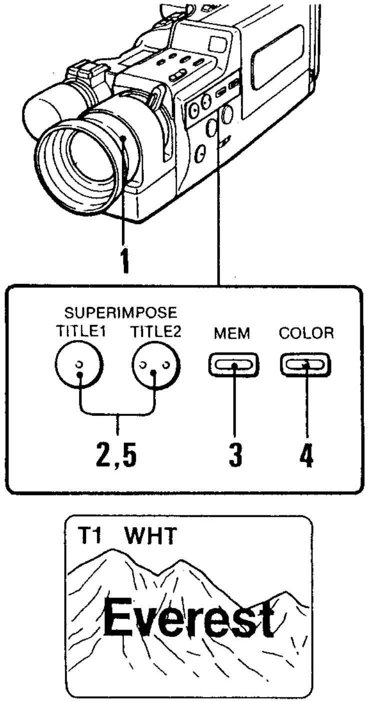
Before memorizing the title

1 Make sure that the lithium battery is installed. See page 7.
2 While pressing the small button, set the POWER switch to CAMERA.
3 Slide up the STANDBY switch to set the unit in the recording pause mode.

Notes

- When deciding the title size, check the effective picture size on your video monitor.
- To record the title, fix the title card and the video camera recorder.
- To memorize a title, use of an appropriate light is recommended for a better result.

N-2



To Memorize the Title N-2

1 Point the camera to the title card and adjust the focus.
2 Press the TITLE 1 or 2 button.
3 Press the MEM button to memorize the title.
4 Select the title color while observing the color indication in the viewfinder. Each push on the COLOR button cyclically changes the color, as follows:

WHT (white) → BLUE → GRN (green) → CYAN
↑ ↓
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED

5 Press the TITLE 1 or 2 button (pressed in step 2) to turn off the title.

Notes

- The color indication in the viewfinder is not recorded on the tapes.
- You can change the title color even after starting the recording.

To check the title
To check the memorized title, press the TITLE 1 or 2 button. To turn off the title, press the button again.

To Record the Title

To record the title from the beginning
Press the TITLE 1 or 2 button in recording pause mode.

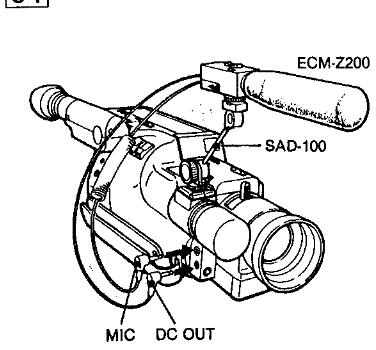
To record during camera recording
Press the TITLE 1 or 2 button at the point from which the title is to be inserted.
The memorized title will be recorded together with the picture.

To stop recording the title
Press the TITLE 1 or 2 button again. The picture recording will continue.

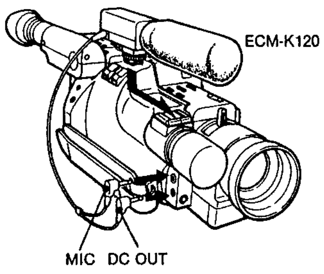
To record the title several times
By repeating the above procedure, you can record the title as many times as desired.

1-12. USE OF AN EXTERNAL MICROPHONE

O-1



O-2



The built-in microphone picks up sounds equally from all directions (omni-directional, monaural type).
By using an optional ECM-Z200 or ECM-K120 microphone, you can enjoy more efficient audio recording.

The **ECM-Z200** can zoom the sound as the lever is slid.
First, attach to the optional SAD-100 external microphone shoe. O-1

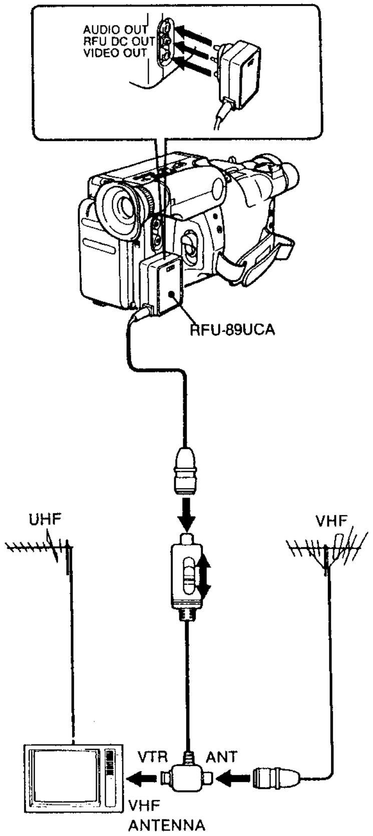
The **ECM-K120** can pick up sound in 3 zones and switch from zone to zone as the selector is set. O-2

A variety of optional microphones.
- Omni-directional microphone: To pick up sounds equally from all directions
- Uni-directional microphone: To pick up specific sounds
- Supercardioid microphone: To isolate a sound
- Zoom microphone: To allow the field of recording to be changed.

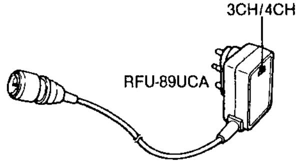
Note
The built-in microphone will not operate when an optional microphone is connected to the MIC jack.

1-13. PREPARATION FOR PLAYBACK

P-1



P-2



When the VCR is connected to the TV.

Connecting a TV

Connecting a TV without audio/video input connectors P-1

1 Connect the RFU-89UCA RFU adaptor to the CCD-F40.
2 Connect the VHF antenna, CCD-F40 and TV to the antenna selector (supplied with the RFU-89UCA).
Use a 75-ohm coaxial cable for antenna connection.
3 Set the selector switch on the antenna selector as follows:

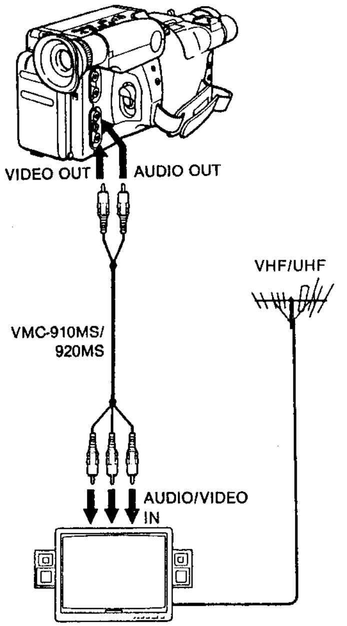
For viewing a playback picture → VTR
For viewing TV programs → ANT

On the TV channel for the video camera recorder P-2

Whenever you view the playback picture, set the channel selector of the RFU-89UCA to either VHF channel 3 CH or 4 CH and select the same channel on the TV.

1-14. PLAYBACK

P-3



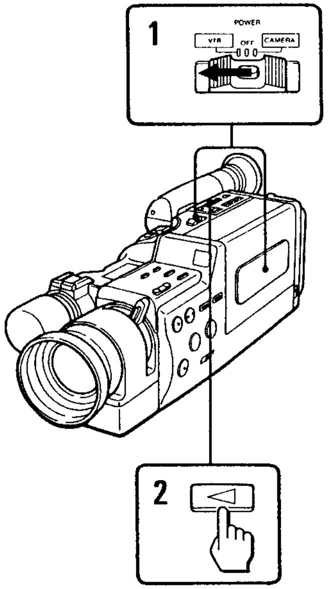
Connecting a TV (or color monitor) equipped with andio/video input connectors P-3

Leave the TV antenna cable connected to the TV.

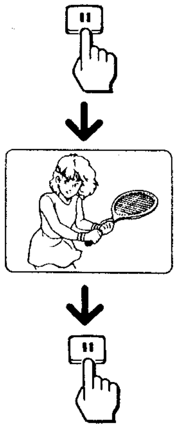
1 Connect the CCD-F40 to the TV using the optional VMC-910MS/920MS audio/video cable.
2 Set the TV/VIDEO selector button on the TV as follows:

For viewing a playback picture → VIDEO For viewing TV programs → TV

Q-1



Q-2



Turn on the TV (or color monitor), and select the channel for viewing a playback picture (or set the TV/VIDEO selector to VIDEO).

1 While pressing the small button, set the POWER switch to VTR, and insert a cassette. Q-1
2 Press the ◁ button.
Playback will start.

To stop the tape, press the ■ button.

After using, be sure to set the POWER switch on the recorder to OFF.

To view a still picture Q-2
Press the ❚❚ button during playback. To resume playback, press the ❚❚ button again.

Monitoring a High-Speed Picture

During playback
1 In the playback mode, press the ◀◀ or ▶▶ button.
The picture will be monitored at high speed as long as it is kept pressed.
2 Release the ◀◀ or ▶▶ button at the desired point.
Normal playback will resume.

During fast-forward or rewind
1 Press the ◀◀ button in fast-forward mode or press the ▶▶ button in rewind mode.
The picture is displayed while the button is kept pressed.
2 Release the ◀◀ or ▶▶ button to resume normal fast-forward or rewind mode.

To View the Frame-by-Frame Playback Picture

Press the ◀❚❚ button during playback or in still pciture mode.
To resume normal playback, press the ◀ button.

To View the Slow Motion Picture

Press the ◀❚ button during playback or in still picture mode.
To resume normal playback, press the ◀ button.

Notes
- If you move the position of the POWER switch during playback, the tape will stop. When you move the POWER switch to CAMERA in the playback pause mode, however, the unit will enter recording pause mode.
- When the pause mode lasts for 5 minutes or more, the unit will automatically enter the stop mode.
- Streaks will appear and the sound will be muted in the high-speed picture.

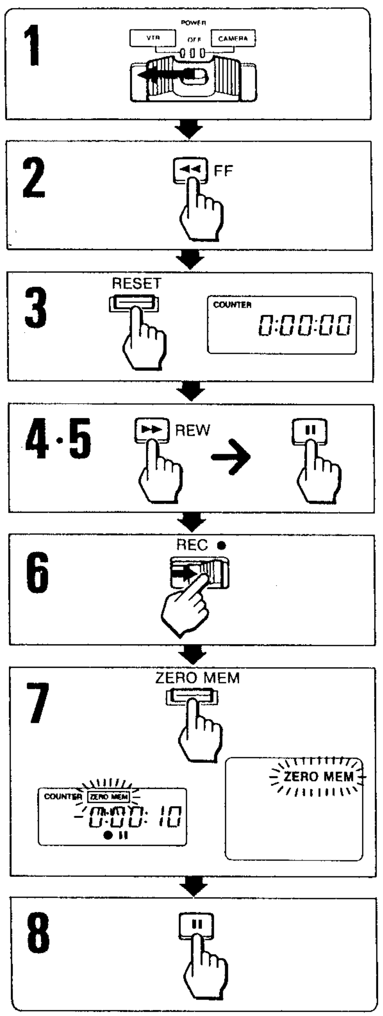
To adjust the frame-by-frame and slow playback pictures
In slow playback mode, press the "+" or "–" side of the EDITSEARCH button until a clear picture is obtained.
Repeat adjusting until a still picture is displayed clearest.

To adjust the still picture
If the still picture appears to shake, press the "+" or "–" side of the EDITSEARCH button until the picture stabilizes.

Note
The adjustment is retained in memory as long as the lithium battery is installed. Readjustment is only required when the equipment used for playback is changed or when tapes recorded on other equipment are played back on this unit. The noise may not be eliminated completely when a tape recorded on other equipment is played back in still or slow picture mode.

1-15. INSERT RECORDING 2

S



To Insert a TV Program or a Picture from Another VCR S

Monitor the picture being inserted on the viewfinder screen.

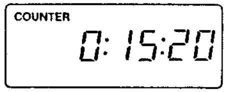
1 While pressing the small button, set the POWER switch to VTR.
2 Locate the point on the tape where the insert should end by pressing the ◀◀ button during playback.
3 Display the counter in the display window and press the RESET button.
The counter is reset to zero.
4 Press the ▶▶ button during playback to rewind the tape a little further than the point where the insert should begin.
5 Release the ▶▶ button to resume playback and press the II button at the insert starting point.
6 Slide the REC ● switch in the arrow direction to set the unit to recording pause mode.
7 Press the ZERO MEM button.
The insert ending point is stored in memory.
8 To start recording, press the II button.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

1-16. USE OF THE TAPE COUNTER

T-1



During recording or when a tape recorded in the SP mode is played back, the digits on the counter indicate the actual recording or playback time. When a tape recorded in LP mode on another recorder is played back on this unit, the counter counts approximately half the actual playback time.

E.g. When the counter indicates "0:15:20" during playback of an LP-recorded tape, the tape was played back for approximately 30 minutes 40 seconds from the counter zero position. T-1

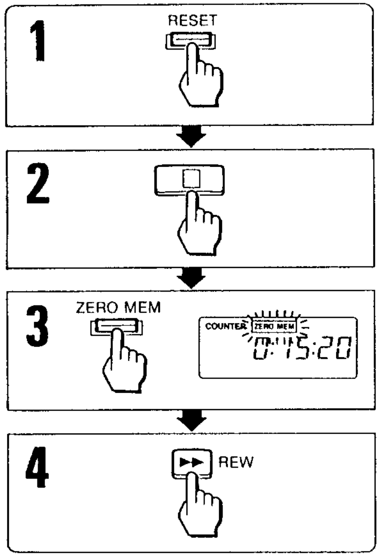
To Index the Whole Tape

Press the RESET button at the beginning of the tape so that the counter shows "0:00:00". By noting the counter reading at a particular point, you can easily find that point later by referring to the tape counter.

Notes

- The counter reading and the point of the tape may not correspond exactly.
- The counter also operates for a blank, unrecorded portion of a tape.
- There will be a time lag of several seconds on the counter reading after repeated fast forward and rewind operations or after playing back in slow mode for a long time.

T-2



To Return to a Pre-registered Point T-2

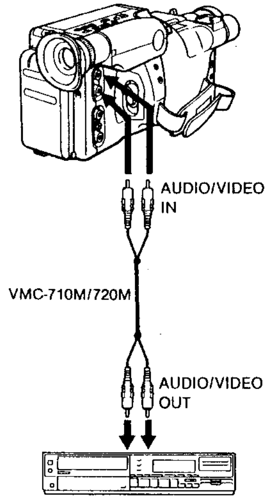
1 During recording or playback, press the RESET button at the point you later want to locate.
2 Press the ■ button when the recording or playback has finished.
3 Press the ZERO MEM button. The "ZERO MEM" indicator will blink in the display window.
4 Press the ▶▶ or ◀◀ button.
The tape will be rewound or sent forward and stop automatically when the counter reaches approximately zero.

Notes

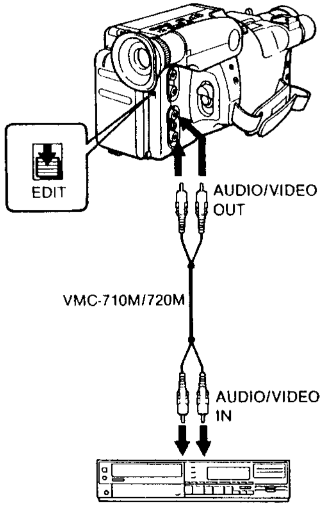
- The ZERO MEM button does not function during recording or playback mode.
- Be sure to press the ZERO MEM button when the tape is stopped.
- The ZERO MEM mode is cancelled automatically once the tape is rewound or sent forward to zero.

1-17. TAPE EDITING

U-1



U-2



To edit a home movie tape, you will need another VCR or another video camera recorder.

To Edit from Another VCR to the CCD-F40 U-1

1 While pressing the small button, set the POWER switch on the CCD-F40 to VTR.
2 Start playback on another VCR.
3 Start recording on the CCD-F40.

To Edit from the CCD-F40 to Another VCR U-2

1 While pressing the small button, set the POWER switch on the CCD-F40 to VTR and turn on the other VCR.
2 Slide the EDIT switch on the CCD-F40 to EDIT.
3 Set the input selector on the VCR to LINE.
4 Press the ❚❚ button on the CCD-F40 during playback at the point where you want to start recording.
5 Press the record button on the other VCR, pressing the ❚❚ button.
6 Release the ❚❚ buttons on both units.
Recording will start.

When the VCR to be used is a stereo type, use the VMC-910MS/920MS connecting cord.

After editing, turn off both units and be sure to slide the EDIT switch to the upper position.

To cut off an unnecessary portion
Press the ❚❚ button on the recorder at the beginning of the unnecessary portion.
Release it where you want to resume recording.

Function of the EDIT switch
Slide this switch down whenever you edit tapes. Signal loss that results from tape-to-tape transfer will be reduced, achieving more accurate signal transfer.
When recording or playing back normally, keep this switch in the upper position.

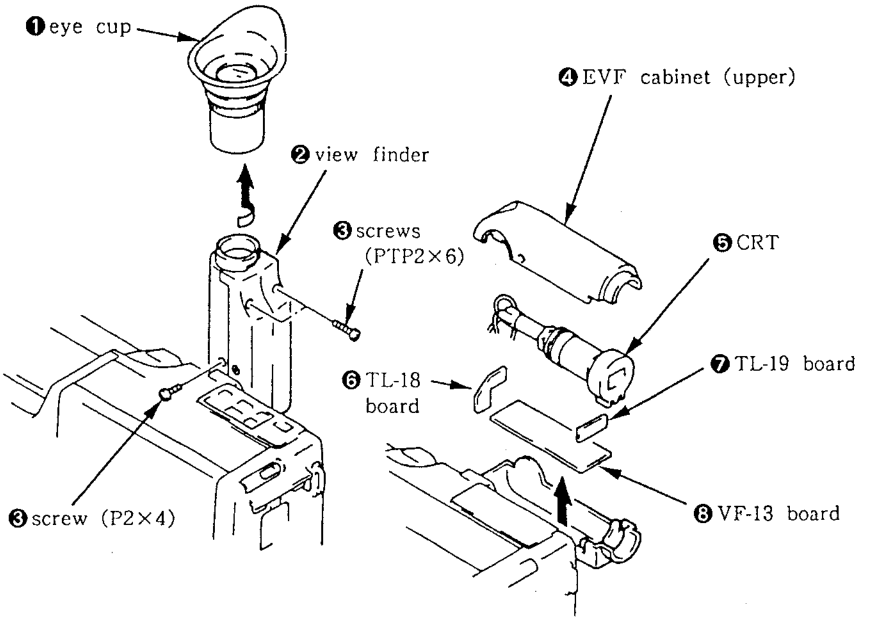
1-18. TROUBLESHOOTING

Symptom	Cause (Trouble Indicator)	Procedure
The power will not turn on.	The battery is not attached.	Attach the battery.
	The battery is exhausted.	Use a new battery.
	The AC power adaptor is not connected to a wall outlet.	Connect the adaptor to a wall outlet.
The START/STOP button does not operate.	The tape is affixed to the drum.	Remove the cassette with the cassette eject button.
	The tape is at its end. (TAPE END)	Rewind the tape or use a new one.
	The POWER switch is set to VTR.	Set it to CAMERA.
	The tab on the cassette is out (red). (CASSETTE)	Use a new casssette or slide the tab.
The tape does not move when a tape transport button is pressed.	POWER switch is set to CAMERA or OFF.	Set it to VTR.
	The tape is at its end.	Rewind the tape or use a new one.
The power turns off.	While being operated in the CAMERA mode, the recorder has been in the pause mode for more than 5 minutes.	Slide down the STANDBY switch, and slide it up again.
	The battery is exhausted. (BATTERY)	Use a charged battery.
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	The contrast between the subject and background is too high; the camera is not malfunctioning.	—
The battery pack is quickly discharged.	The ambient temperature is too low.	—
	The battery pack has not been charged fully.	Charge the battery pack again.
The cassette cannot be removed from the compartment.	The battery is exhausted.	Use the charged battery or the AC power adaptor
The auto focusing function does not work.	The AUTO LOCK switch is set to the right.	Set the AUTO LOCK switch to AUTO LOCK.
	Shooting conditions are not suitable for auto focusing operation. (See page 10.)	Focus manually.
The color of the playback is not appropriate.	The white balance sensor is covered.	Clear the sensor.
The image on the viewfinder screen is not clear.	The viewfinder lens is not adjusted.	Adjust the viewfinder lens.
The playback picture is not clear.	The EDIT switch is set to the "EDIT" position.	Set the EDIT switch to the upper position.
	The channel for the VCR is not adjusted on the TV.	Adjust the TV.
The playback picture is too bright.	The BACK LIGHT button was not released during recording. (BACK LIGHT)	—
The picture is noisy.	The video heads may be contaminated.	Clean the heads using the Sony V8-25CL video head cleaning cassette. For details on cleaning, refer to the instructions furnished with the cleaning cassette. If the V8-25CL cleaning cassette is not available in your area, have the heads cleaned at the nearest Sony service facility.
No function except for cassette ejection works.	Moisture condensation has occurred. (DEW)	Remove the cassette and leave the unit for at least an hour.
The indicators in the viewfinder blink.	The lithium battery is not installed. (COUNTER)	Install the lithium battery.
	The lithium battery is exhausted. (COUNTER)	Use a new battery

SECTION 2
DISASSEMBLY

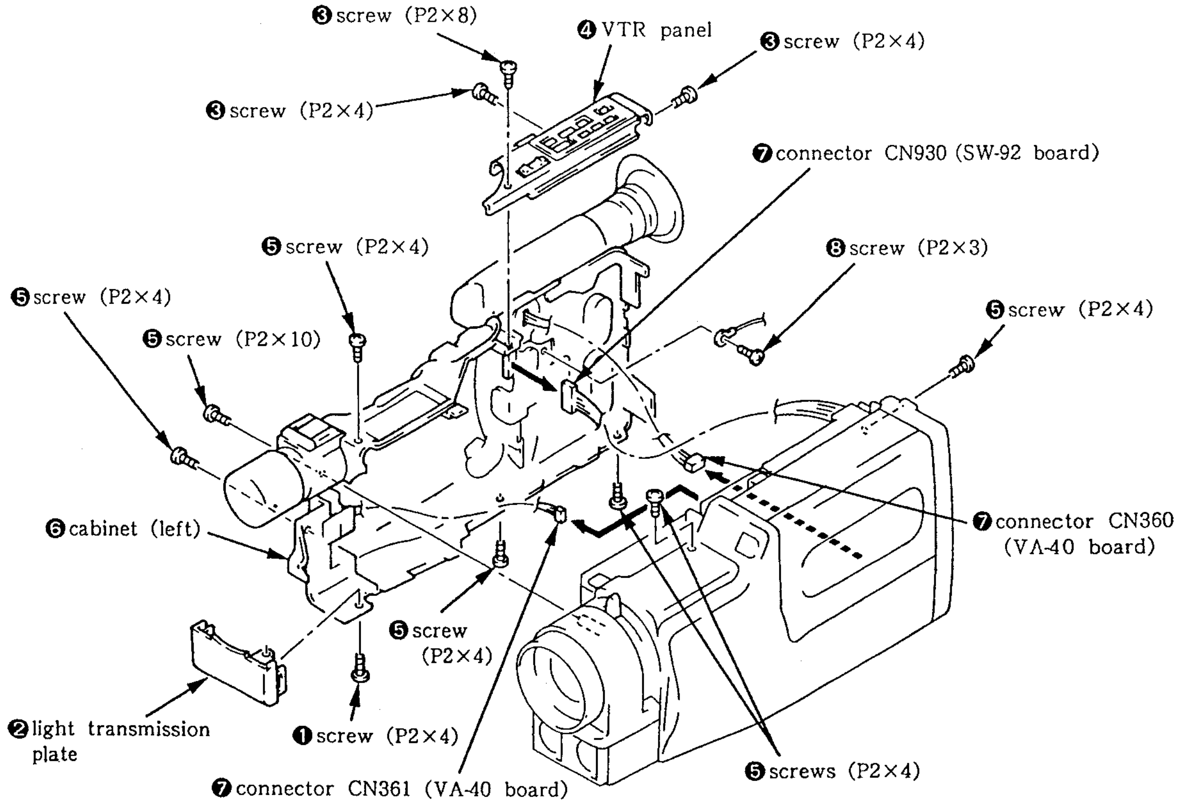
2−1. REMOVING THE VIEW FINDER

1) Turn the eye cup ❶ counterclockwise and remove.
2) Raise the view finder ❷.
3) Remove three screws ❸.
4) Put the view finder ❷ down on the bench.
5) Remove the EVF cabinet (upper) ❹ , and separate the CRT ❺, TL-18 board ❻, TL-19 board ❼ and VF-13 board ❽.


❶eye cup
❷view finder
❸screws (PTP2×6)
❸screw (P2×4)
❹EVF cabinet (upper)
❺CRT
❻TL-18 board
❼TL-19 board
❽VF-13 board

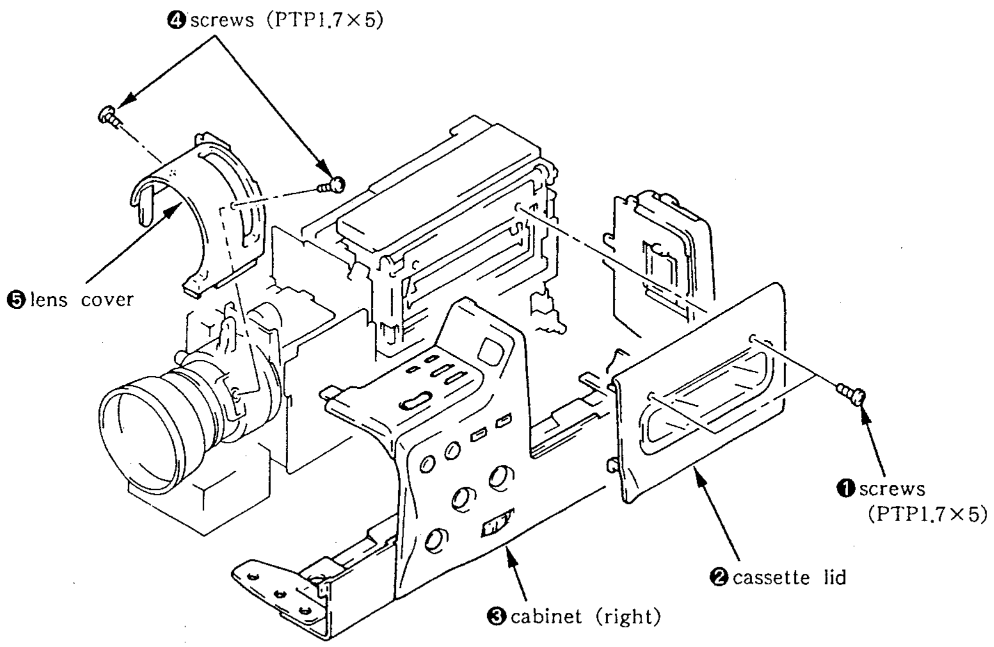
2−2. REMOVING THE CABINET (LEFT)

1) Remove a screw ❶ and detach the light transmission plate ❷.
2) Remove three screws ❸ and separate the VTR panel ❹.
3) Remove seven screws ❺ and take off the cabinet(left) ❻.
4) Unplng three connectors ❼.
5) Remove a screw ❽.


❸screw (P2×8)
❹VTR panel
❸screw (P2×4)
❸screw (P2×4)
❼connector CN930 (SW-92 board)
❺screw (P2×4)
❽screw (P2×3)
❺screw (P2×4)
❺screw (P2×10)
❺screw (P2×4)
❼connector CN360 (VA-40 board)
❻cabinet (left)
❺screw (P2×4)
❷light transmission plate
❶screw (P2×4)
❼connector CN361 (VA-40 board)
❺screws (P2×4)

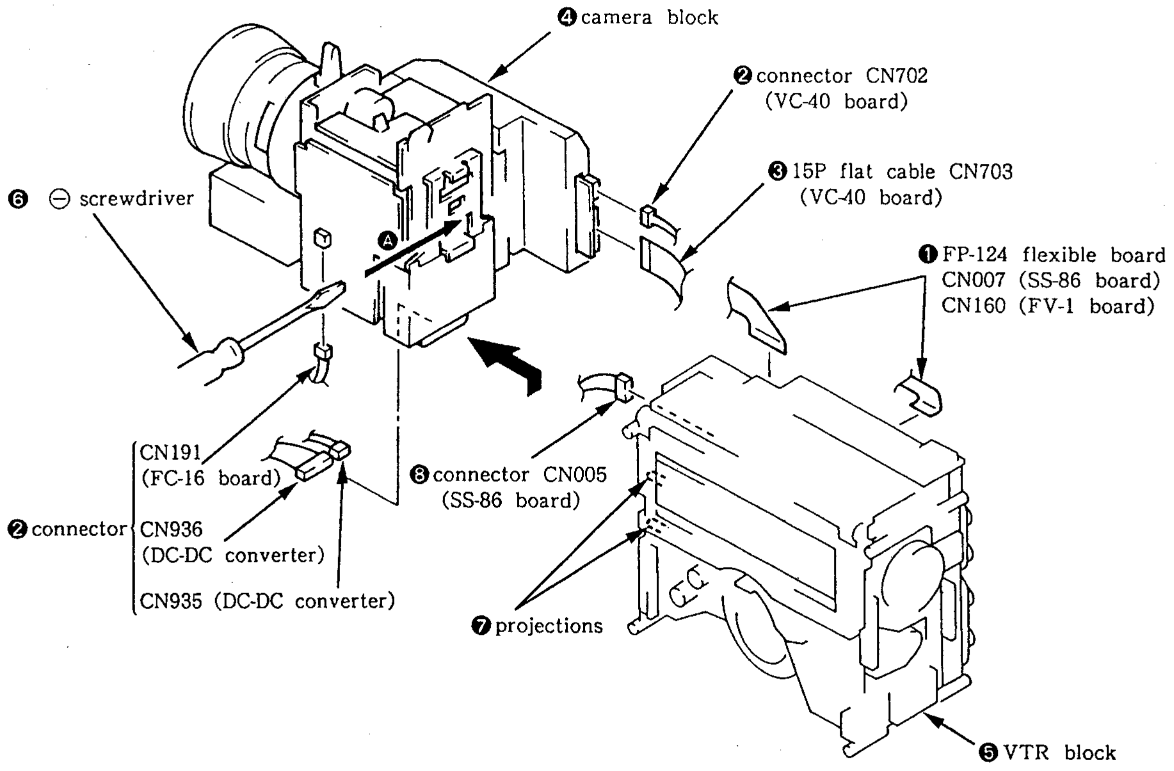
2-3. REMOVING THE CABINET (RIGHT)

1) Remove two screws ① and detach the cassette lid ②.
2) Take off the cabinet (right) ③.
3) Remove two screws ④ and detach the lens cover ⑤.


④screws (PTP1.7×5)
⑤lens cover
①screws (PTP1.7×5)
②cassette lid
③cabinet (right)

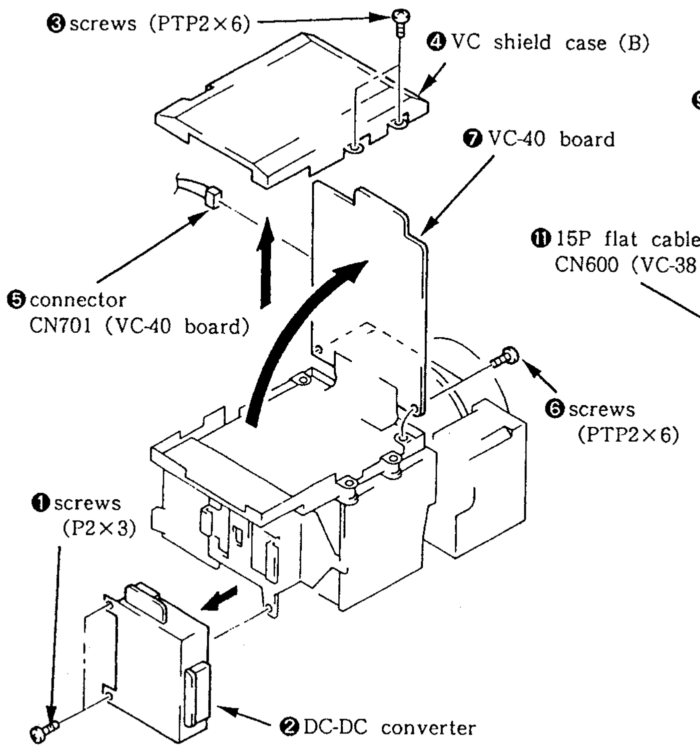
2-4. SEPARATING THE CAMERA AND VTR BLOCKS

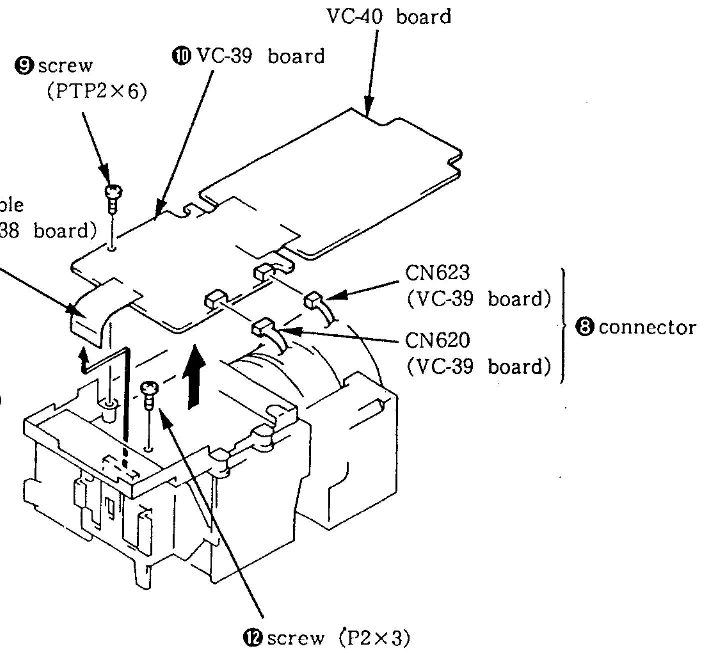
1) Remove the FP-124 flexible board ①.
2) Disconnect the four connectors ② and the 15P flat cable ③.
3) Insert a flat-bladed screwdriver ⑥ between the camera block ④ and VTR block ⑤ (as shown by arrow Ⓐ) to separate two projections ⑦. Then slightly lift and remove the camera block ④.
4) Unplng a connector ⑧.


④camera block
②connector CN702 (VC-40 board)
③15P flat cable CN703 (VC-40 board)
①FP-124 flexible board CN007 (SS-86 board) CN160 (FV-1 board)
⑥ ⊖ screwdriver
Ⓐ
②connector CN191 (FC-16 board) CN936 (DC-DC converter) CN935 (DC-DC converter)
⑧connector CN005 (SS-86 board)
⑦projections
⑤VTR block

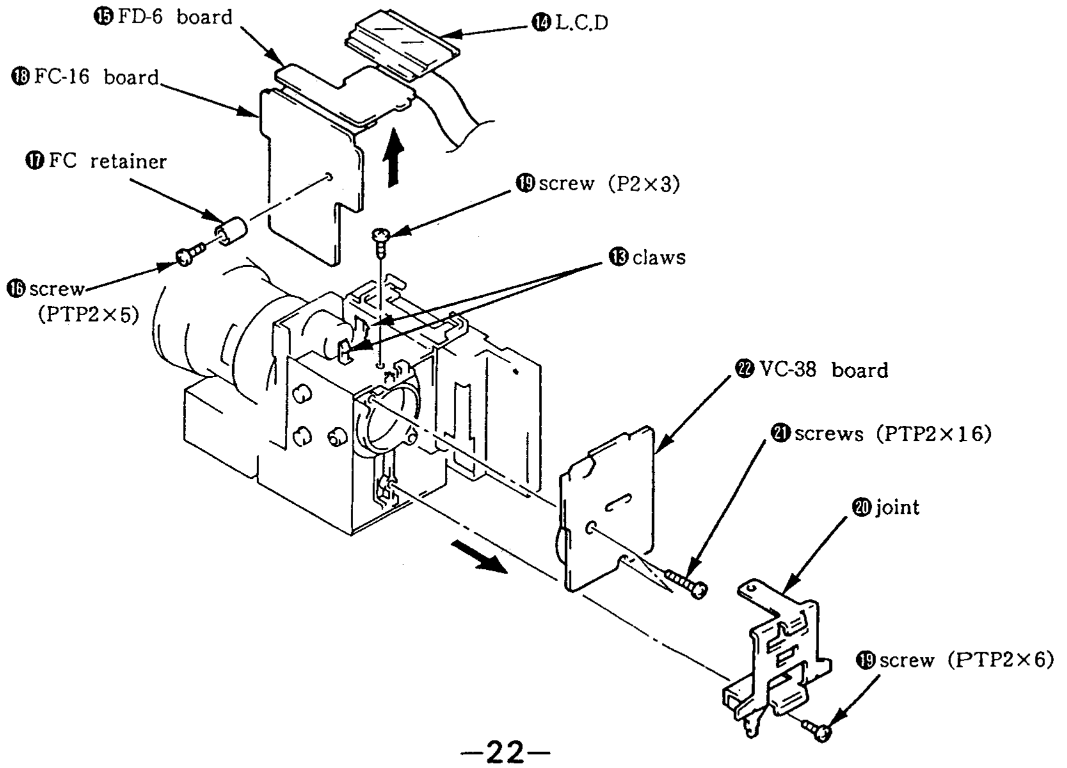
2-5. REMOVING THE VC-38 (CCD IMAGER), VC -39, AND VC-40 BOARDS

1) Remove two screws ① and take off the DC-DC convertor ②.
2) Remove two screws ③ and detach the VC shield case (B) ④.
3) Unplng a connector ⑤.
4) Remove two screws ⑥ and open the VC-40 board ⑦.
5) Unplng two connectors ⑧.
6) Remove a screw ⑨ and take off the VC-39 board ⑩.
7) Disconnect the 15P flat cable ⑪.
8) Remove a screw ⑫.


③screws (PTP2×6)
④VC shield case (B)
⑦VC-40 board
⑤connector CN701 (VC-40 board)
⑥screws (PTP2×6)
①screws (P2×3)
②DC-DC converter


VC-40 board
⑨screw (PTP2×6)
⑩VC-39 board
⑪15P flat cable CN600 (VC-38 board)
CN623 (VC-39 board)
CN620 (VC-39 board)
⑧connector
⑫screw (P2×3)

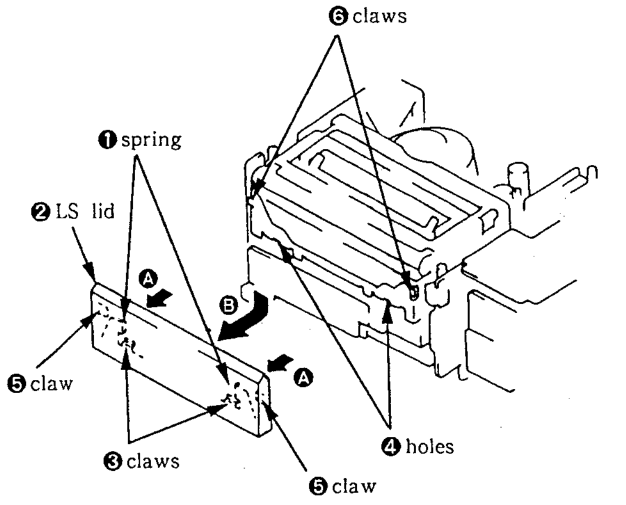
9) Release two claws ⑬, and remove the LCD ⑭ and FD-6 board ⑮.
10) Remove a screw ⑯, and take off the FC retainer ⑰ and FC-16 board ⑱.
11) Remove two screws ⑲, and take off the joint ⑳.
12) Remove two screws ㉑, and take off the VC-38 board ㉒.


⑮FD-6 board
⑭L.C.D
⑱FC-16 board
⑰FC retainer
⑲screw (P2×3)
⑬claws
⑯screw (PTP2×5)
㉒VC-38 board
㉑screws (PTP2×16)
⑳joint
⑲screw (PTP2×6)

2-6. REMOVING THE LS LID

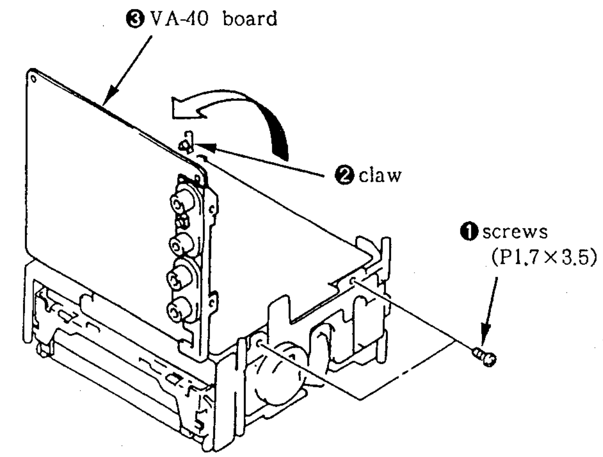
1) Insert a thin flat-bladed screwdriver into the spring ❶ at 2 points and push it in the direction of arrow Ⓐ, and then remove the LS lid ❷ in the direction of arrow Ⓑ.

Note : To re-assemble, locate the two claws ❸ at the back of each hole ❹ at 2 points, and also the two claws ❺ at the back of each claw ❻ at 2 locations.


❻claws
❶spring
❷LS lid
Ⓐ
Ⓑ
Ⓐ
❺claw
❸claws
❹holes
❺claw

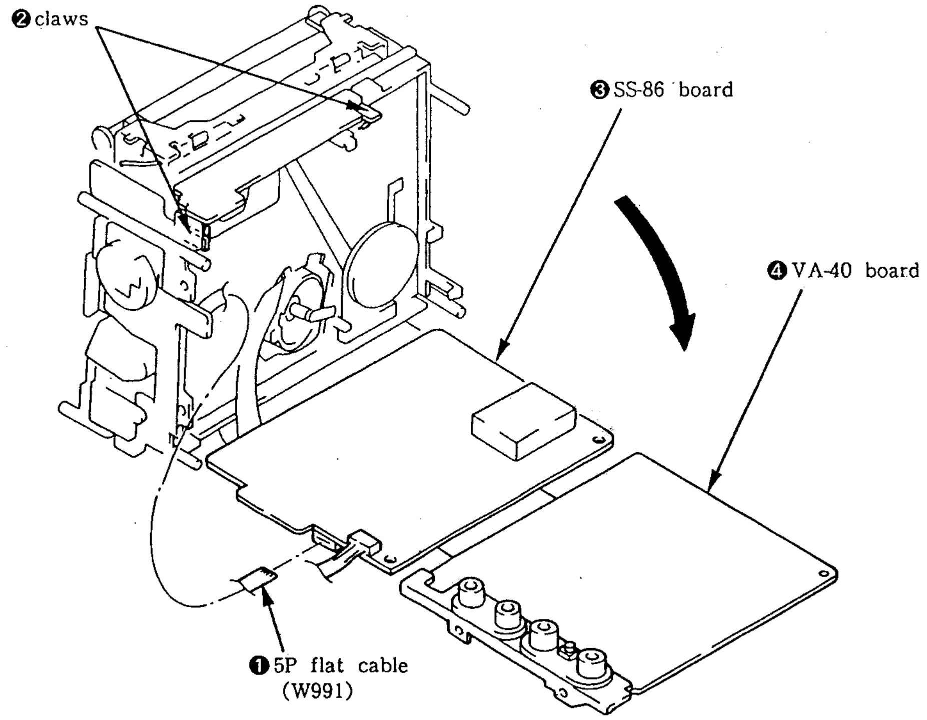
2-7. OPENING THE VA-40 BOARD

1) Remove two screws ❶.
2) Release single claw ❷.
3) Open the VA-40 board ❸ as shown by the arrow.


❸VA-40 board
❷claw
❶screws
(P1.7×3.5)

2-8. OPENING THE SS-86 BOARD

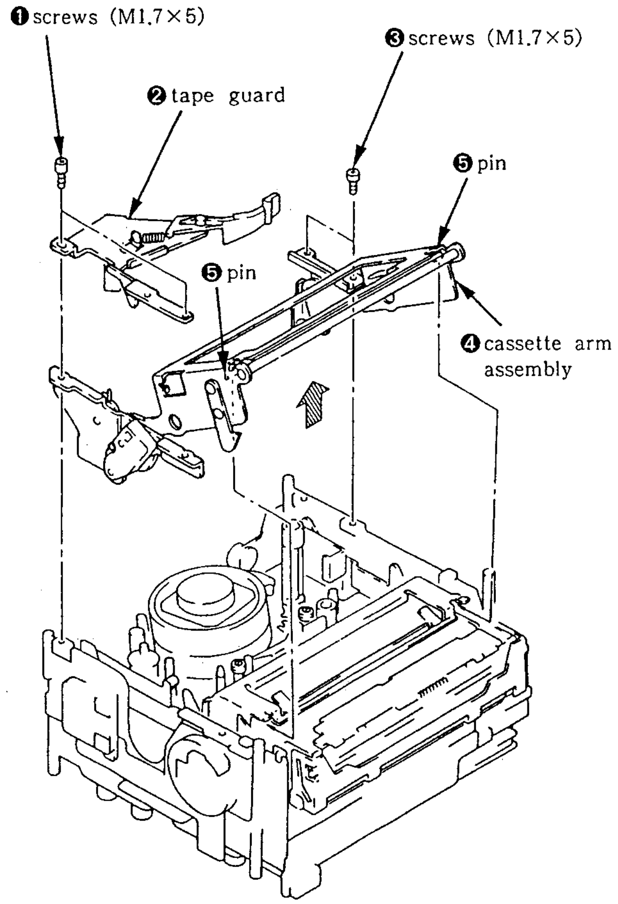
1) Disconnect the 5P flat cable ❶.
2) Release the claw ❷ at two points, and open the SS-86 and VA-40 boards ❸ and ❹ as shown by the arrow.


❷claws
❸SS-86 board
❹VA-40 board
❶5P flat cable
(W991)

2-9. REMOVING THE CASSETTE ARM

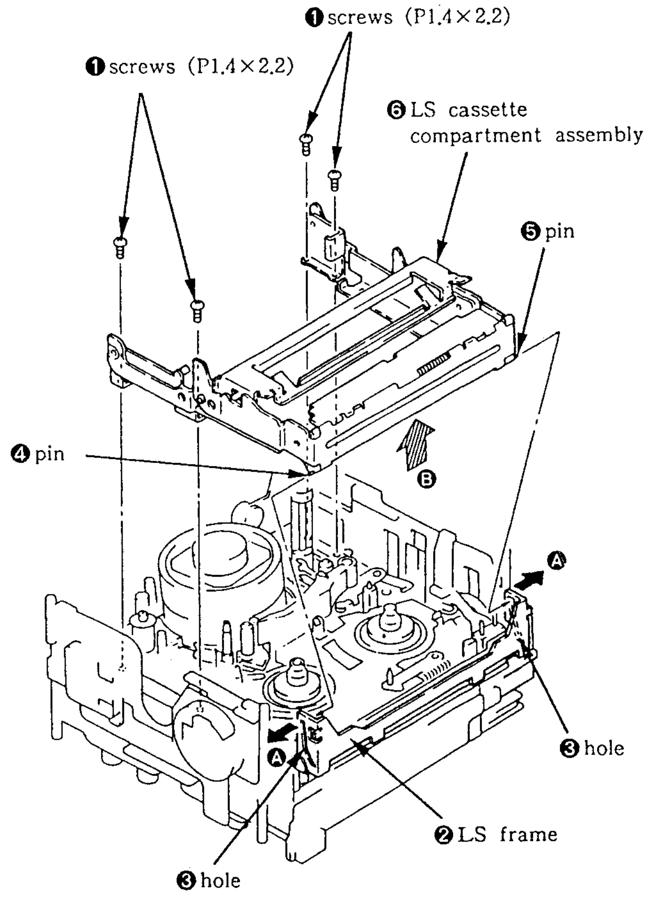
1) Remove two screws ❶ and take off the tape guard ❷.
2) Remove two screws❸ and take off the cassette arm assembly ❹ in the direction of the arrow.

Note : To re-assembly the cassette arm assembly ❹, ajust it so that pin ❺ can be inserted in the correct position.


❶screws (M1.7×5)
❸screws (M1.7×5)
❷tape guard
❺pin
❺pin
❹cassette arm
assembly

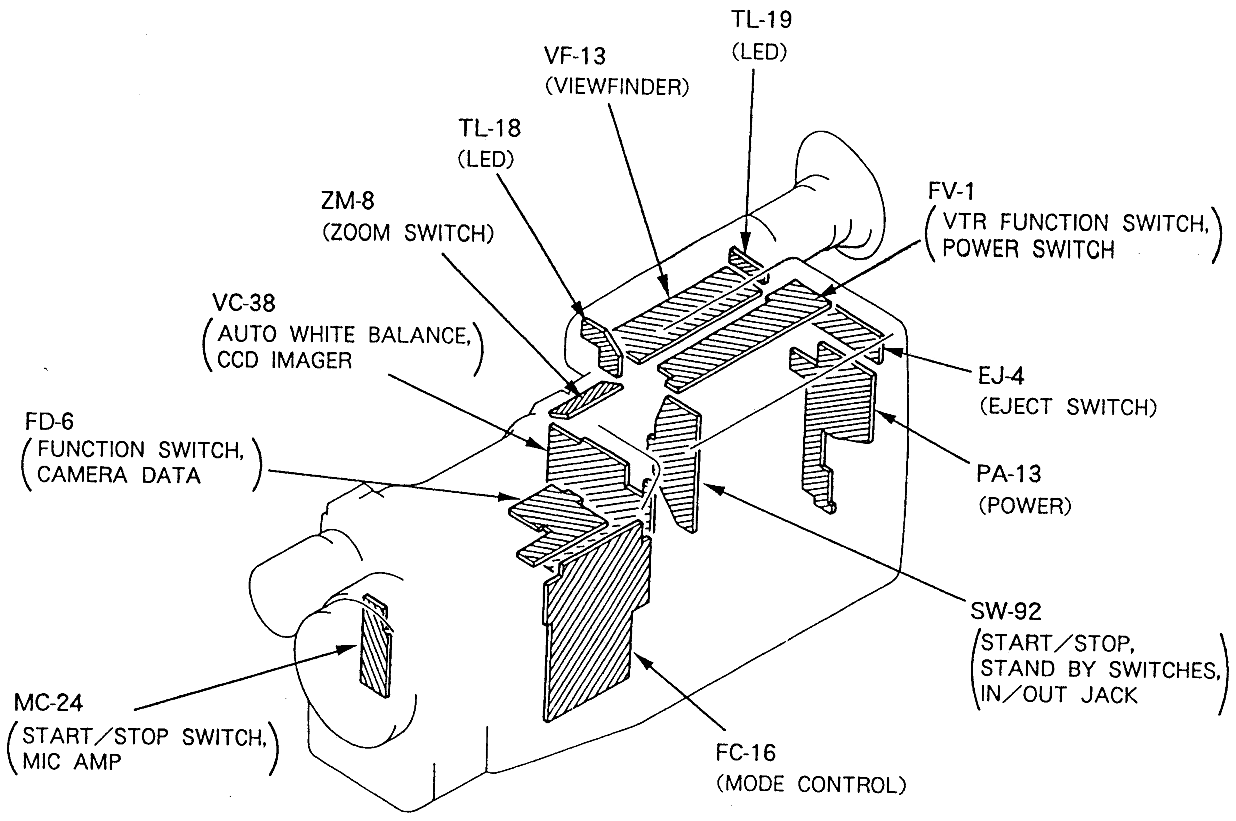
2-10. REMOVING LS CASSETTE COMPARTMENT ASSEMBLY

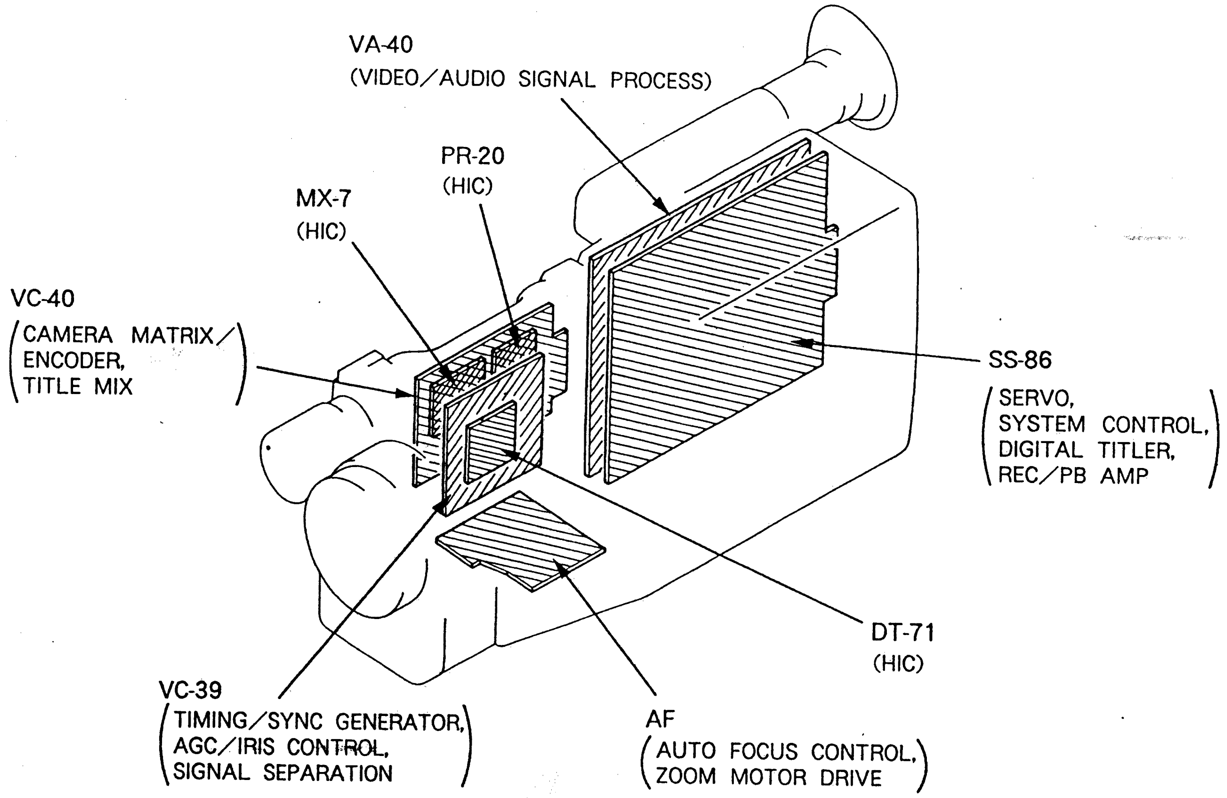
1) Remove four screws ❶.
2) Press the recessed parts, or hole ❸ on LS frame ❷ at 2 points as shown by the arrow Ⓐ in order to disconnect pins ❹ and ❺.(First disconnect pin ❹ since it is shorter than pin ❺.)
3) Remove the LS cassette compartment assembly ❻ as shown by the arrow Ⓑ.


❶screws (P1.4×2.2)
❶screws (P1.4×2.2)
❻LS cassette
compartment assembly
❺pin
❹pin
Ⓑ
Ⓐ
Ⓐ
❸hole
❷LS frame
❸hole

SECTION 3
DIAGRAMS

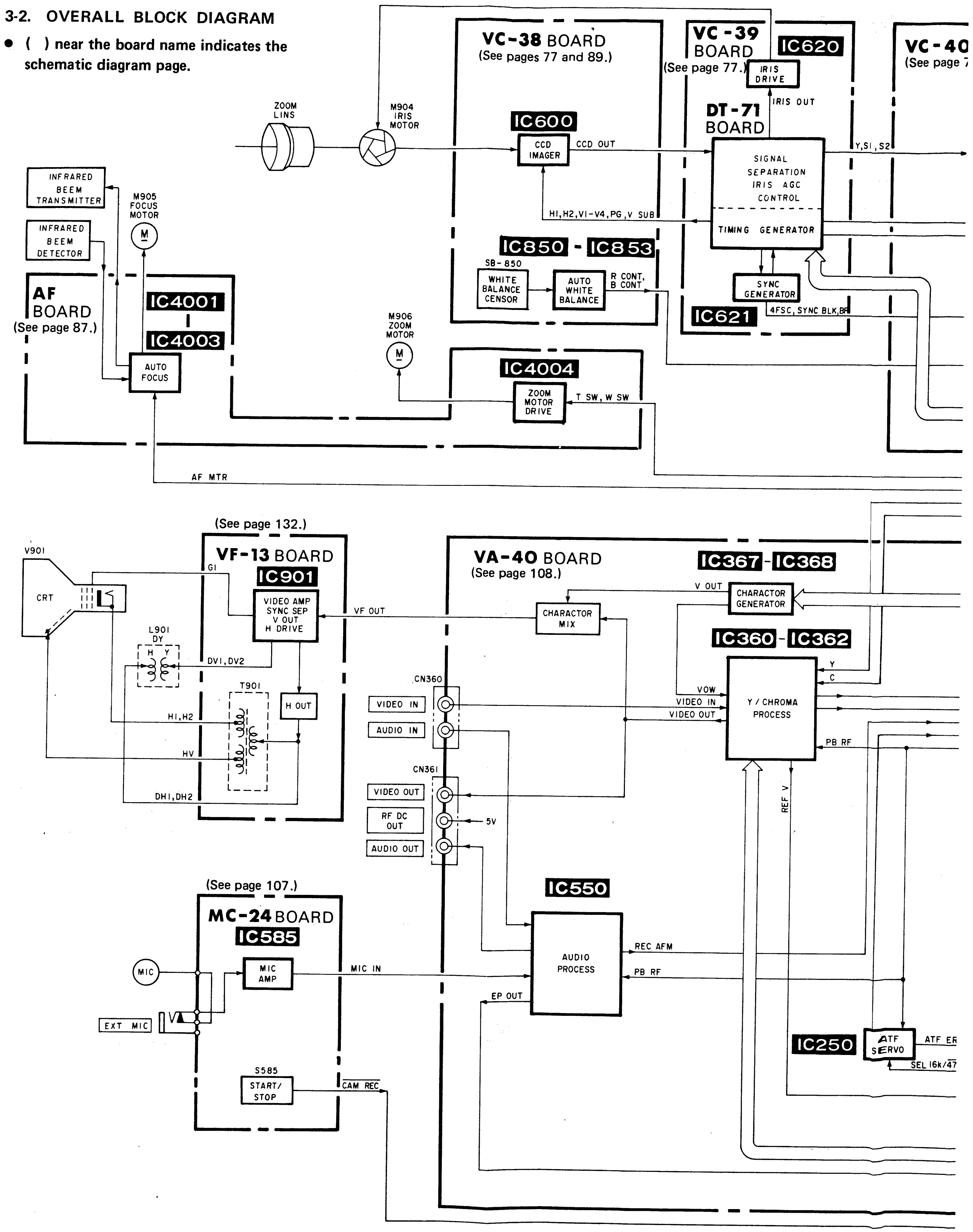
3-1. CIRCUIT BOARDS LOCATION

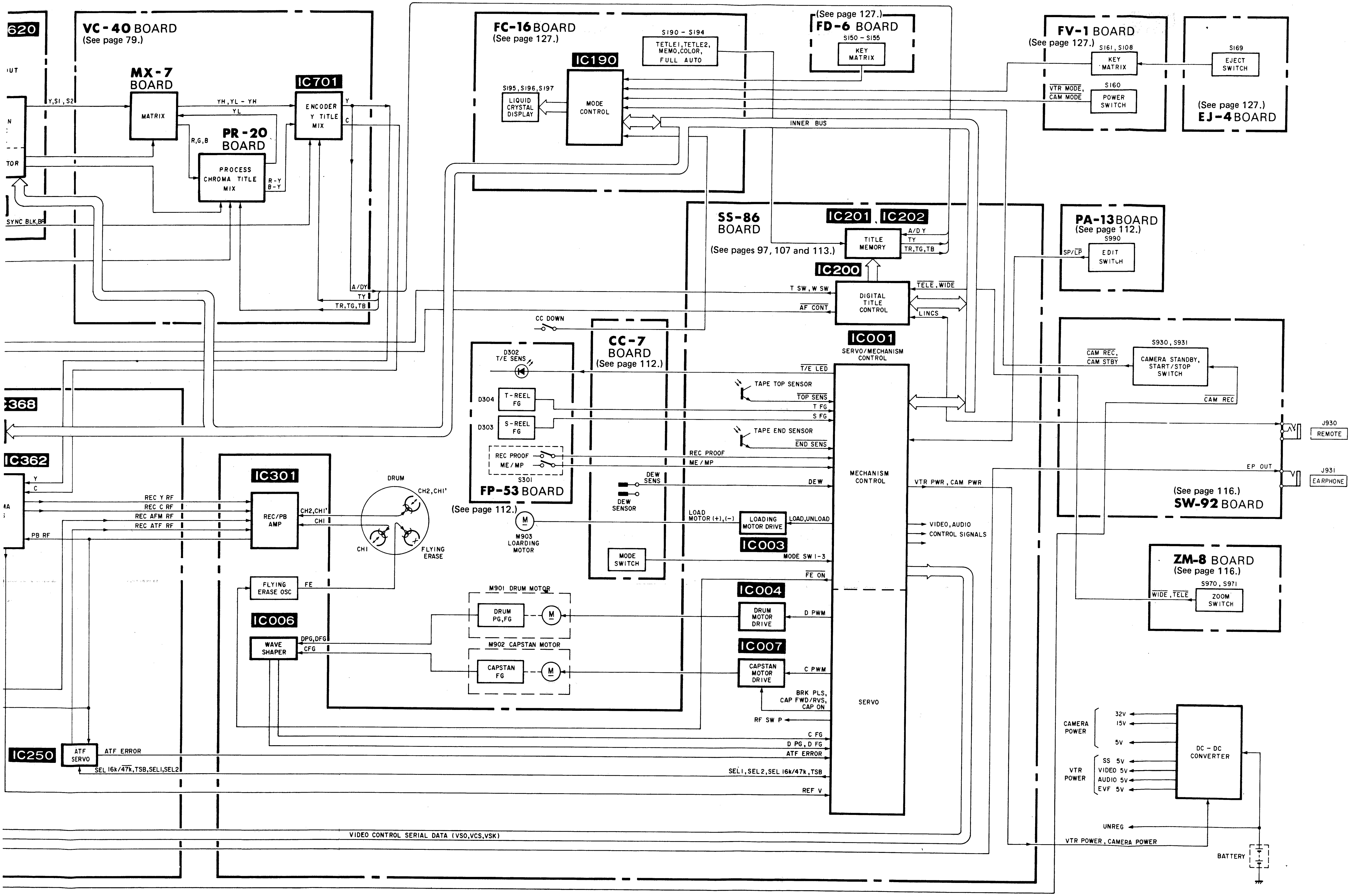

TL-19
(LED)
VF-13
(VIEWFINDER)
TL-18
(LED)
ZM-8
(ZOOM SWITCH)
FV-1
(VTR FUNCTION SWITCH, POWER SWITCH)
VC-38
(AUTO WHITE BALANCE, CCD IMAGER)
EJ-4
(EJECT SWITCH)
FD-6
(FUNCTION SWITCH, CAMERA DATA)
PA-13
(POWER)
SW-92
(START/STOP, STAND BY SWITCHES, IN/OUT JACK)
MC-24
(START/STOP SWITCH, MIC AMP)
FC-16
(MODE CONTROL)

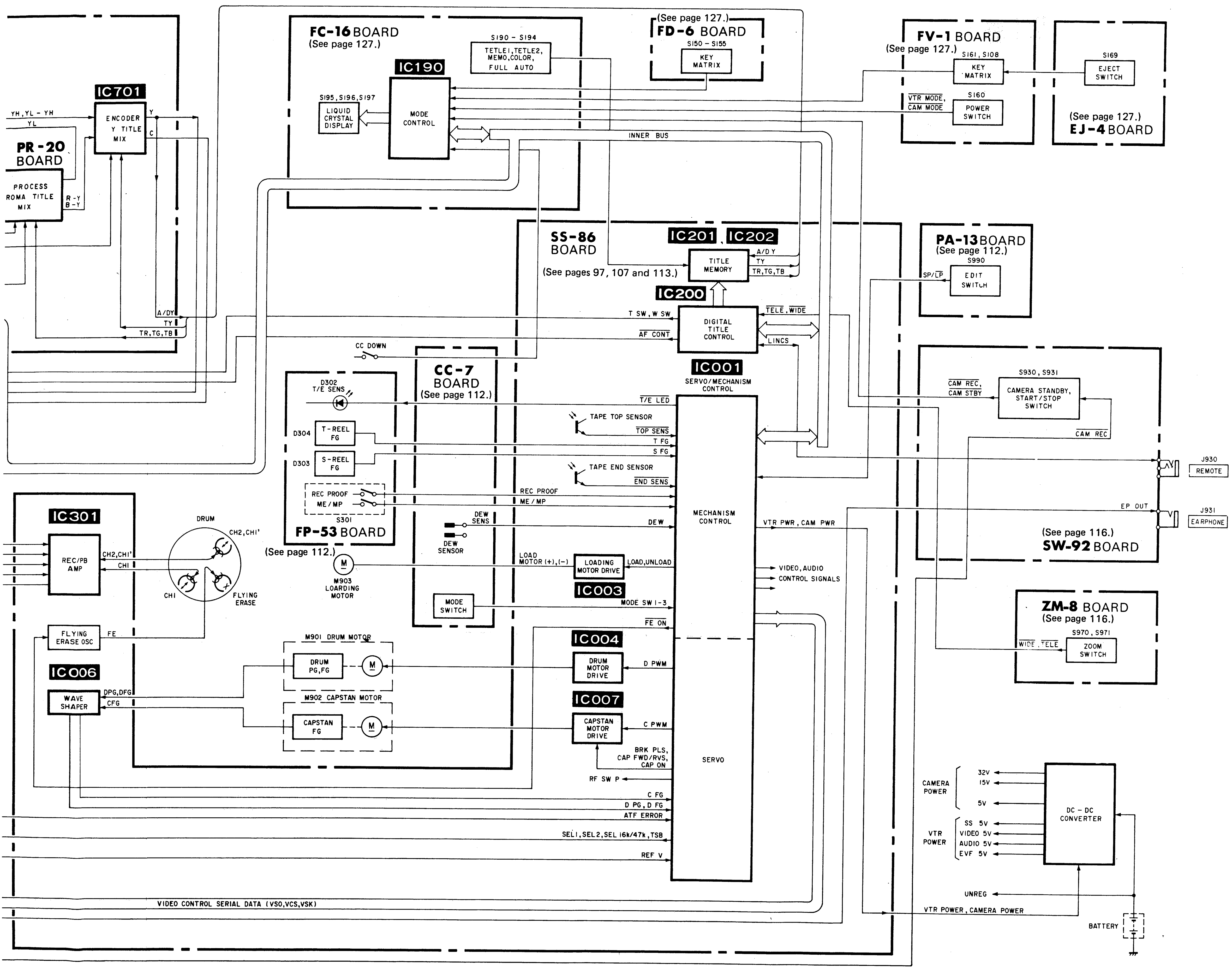

VA-40
(VIDEO/AUDIO SIGNAL PROCESS)
PR-20
(HIC)
MX-7
(HIC)
VC-40
(CAMERA MATRIX/ ENCODER, TITLE MIX)
SS-86
(SERVO, SYSTEM CONTROL, DIGITAL TITLER, REC/PB AMP)
DT-71
(HIC)
VC-39
(TIMING/SYNC GENERATOR, AGC/IRIS CONTROL, SIGNAL SEPARATION)
AF
(AUTO FOCUS CONTROL, ZOOM MOTOR DRIVE)

3-2. OVERALL BLOCK DIAGRAM

- ( ) near the board name indicates the schematic diagram page.


ZOOM LINS
M904 IRIS MOTOR
VC-38 BOARD
(See pages 77 and 89.)
IC600
CCD IMAGER
CCD OUT
H1,H2,V1-V4,PG,V SUB
IC850 - IC853
SB-850
WHITE BALANCE CENSOR
AUTO WHITE BALANCE
R CONT, B CONT
VC-39 BOARD
(See page 77.)
IC620
IRIS DRIVE
IRIS OUT
DT-71 BOARD
SIGNAL SEPARATION IRIS AGC CONTROL
TIMING GENERATOR
SYNC GENERATOR
IC621
4FSC, SYNC BLK,BF
Y,S1,S2
VC-40
(See page 7
INFRARED BEEM TRANSMITTER
INFRARED BEEM DETECTOR
M905 FOCUS MOTOR
AF BOARD
(See page 87.)
IC4001
IC4003
AUTO FOCUS
M906 ZOOM MOTOR
IC4004
ZOOM MOTOR DRIVE
T SW, W SW
AF MTR
(See page 132.)
V901
CRT
VF-13 BOARD
G1
IC901
VIDEO AMP SYNC SEP V OUT H DRIVE
VF OUT
L901 DY
H Y
DV1,DV2
T901
H OUT
H1,H2
HV
DH1,DH2
VA-40 BOARD
(See page 108.)
IC367 - IC368
V OUT
CHARACTOR GENERATOR
CHARACTOR MIX
IC360 - IC362
Y
C
VOW
VIDEO IN
VIDEO OUT
Y / CHROMA PROCESS
PB RF
REF V
CN360
VIDEO IN
AUDIO IN
CN361
VIDEO OUT
RF DC OUT
AUDIO OUT
5V
IC550
AUDIO PROCESS
REC AFM
PB RF
EP OUT
IC250
ATF SERVO
ATF ER
SEL 16k/47
(See page 107.)
MC-24 BOARD
IC585
MIC
MIC AMP
MIC IN
EXT MIC
S585
START/ STOP
CAM REC

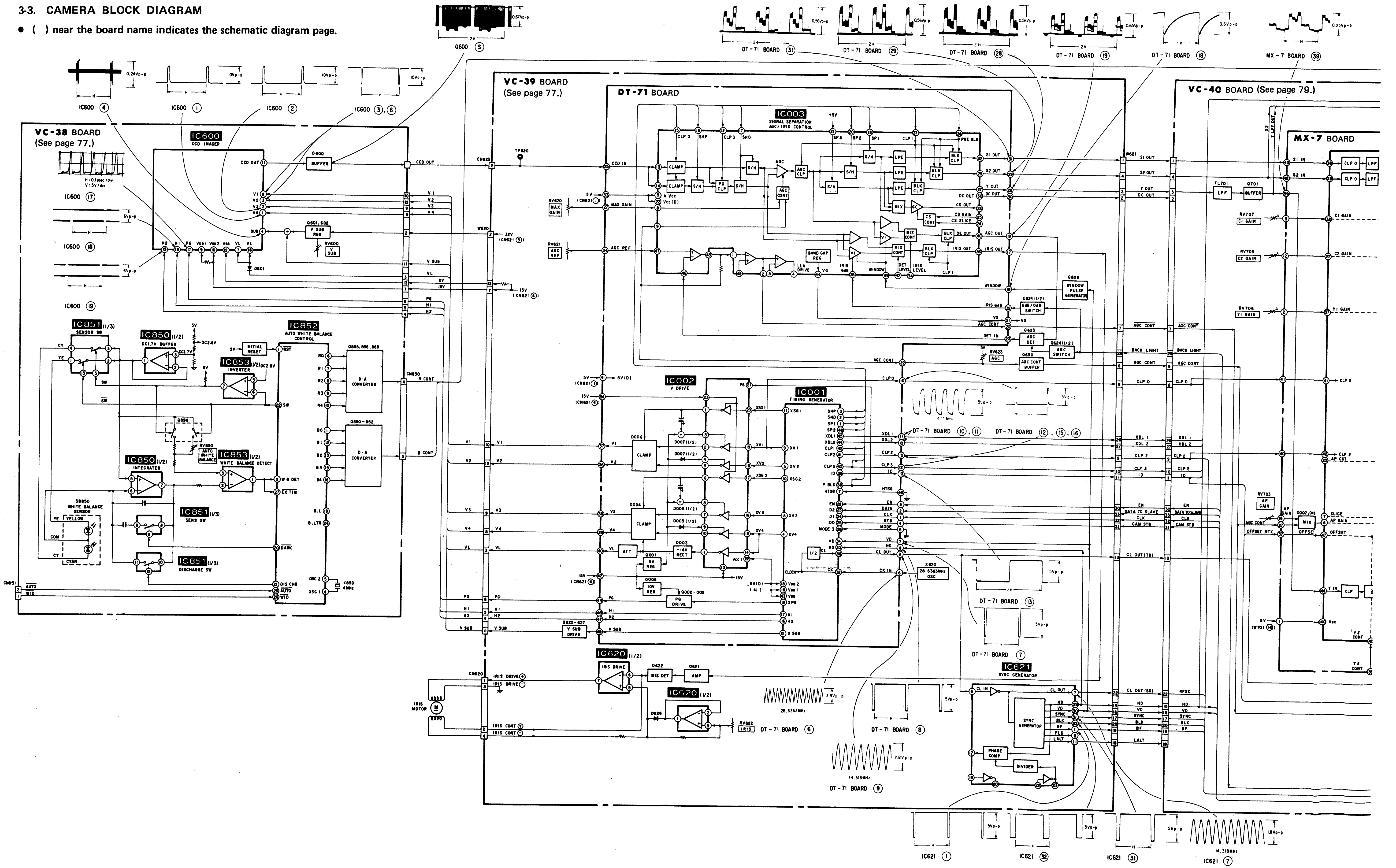

620
IUT
N
TOR
SYNC BLK,BF
Y,SI,S2
VC-40 BOARD
(See page 79.)
MX-7 BOARD
MATRIX
YH,YL - YH
YL
R,G,B
PR-20 BOARD
PROCESS CHROMA TITLE MIX
R-Y
B-Y
IC701
ENCODER Y TITLE MIX
Y
C
A/DY
TY
TR,TG,TB
FC-16 BOARD
(See page 127.)
S190 - S194
TETLE1,TETLE2, MEMO,COLOR, FULL AUTO
IC190
S195,S196,S197
LIQUID CRYSTAL DISPLAY
MODE CONTROL
INNER BUS
(See page 127.)
FD-6 BOARD
S150 - S155
KEY MATRIX
FV-1 BOARD
(See page 127.)
S161, S108
KEY MATRIX
VTR MODE, CAM MODE
S160
POWER SWITCH
S169
EJECT SWITCH
(See page 127.)
EJ-4 BOARD
SS-86 BOARD
(See pages 97, 107 and 113.)
IC201, IC202
TITLE MEMORY
A/D Y
TY
TR,TG,TB
IC200
T SW, W SW
AF CONT
DIGITAL TITLE CONTROL
TELE, WIDE
LINCS
PA-13 BOARD
(See page 112.)
S990
SP/LP
EDIT SWITCH
IC001
SERVO/MECHANISM CONTROL
S930, S931
CAM REC, CAM STBY
CAMERA STANDBY, START/STOP SWITCH
CAM REC
J930
REMOTE
EP OUT
J931
EARPHONE
(See page 116.)
SW-92 BOARD
368
IC362
Y
C
IA
CC DOWN
CC-7 BOARD
(See page 112.)
D302 T/E SENS
D304
T-REEL FG
D303
S-REEL FG
REC PROOF
ME/MP
S301
FP-53 BOARD
(See page 112.)
T/E LED
TAPE TOP SENSOR
TOP SENS
T FG
S FG
TAPE END SENSOR
END SENS
REC PROOF
ME/MP
DEW SENS
DEW SENSOR
DEW
MECHANISM CONTROL
VTR PWR, CAM PWR
IC301
REC Y RF
REC C RF
REC AFM RF
REC ATF RF
PB RF
REC/PB AMP
CH2,CH1'
CH1
DRUM
CH2,CH1'
CH1
FLYING ERASE
M903 LOARDING MOTOR
LOAD MOTOR (+),(-)
LOADING MOTOR DRIVE
LOAD,UNLOAD
IC003
VIDEO,AUDIO CONTROL SIGNALS
MODE SWITCH
MODE SW 1-3
FE ON
FLYING ERASE OSC
FE
M901 DRUM MOTOR
DRUM PG,FG
M
IC004
DRUM MOTOR DRIVE
D PWM
IC006
WAVE SHAPER
DPG,DFG
CFG
M902 CAPSTAN MOTOR
CAPSTAN FG
M
IC007
CAPSTAN MOTOR DRIVE
C PWM
BRK PLS, CAP FWD/RVS, CAP ON
SERVO
RF SW P
C FG
D PG, D FG
ATF ERROR
IC250
ATF SERVO
ATF ERROR
SEL 16k/47k,TSB,SEL1,SEL2
SEL1,SEL2,SEL 16k/47k,TSB
REF V
VIDEO CONTROL SERIAL DATA (VSO,VCS,VSK)
ZM-8 BOARD
(See page 116.)
S970, S971
WIDE, TELE
ZOOM SWITCH
CAMERA POWER
32V
15V
5V
VTR POWER
SS 5V
VIDEO 5V
AUDIO 5V
EVF 5V
DC - DC CONVERTER
UNREG
VTR POWER, CAMERA POWER
BATTERY

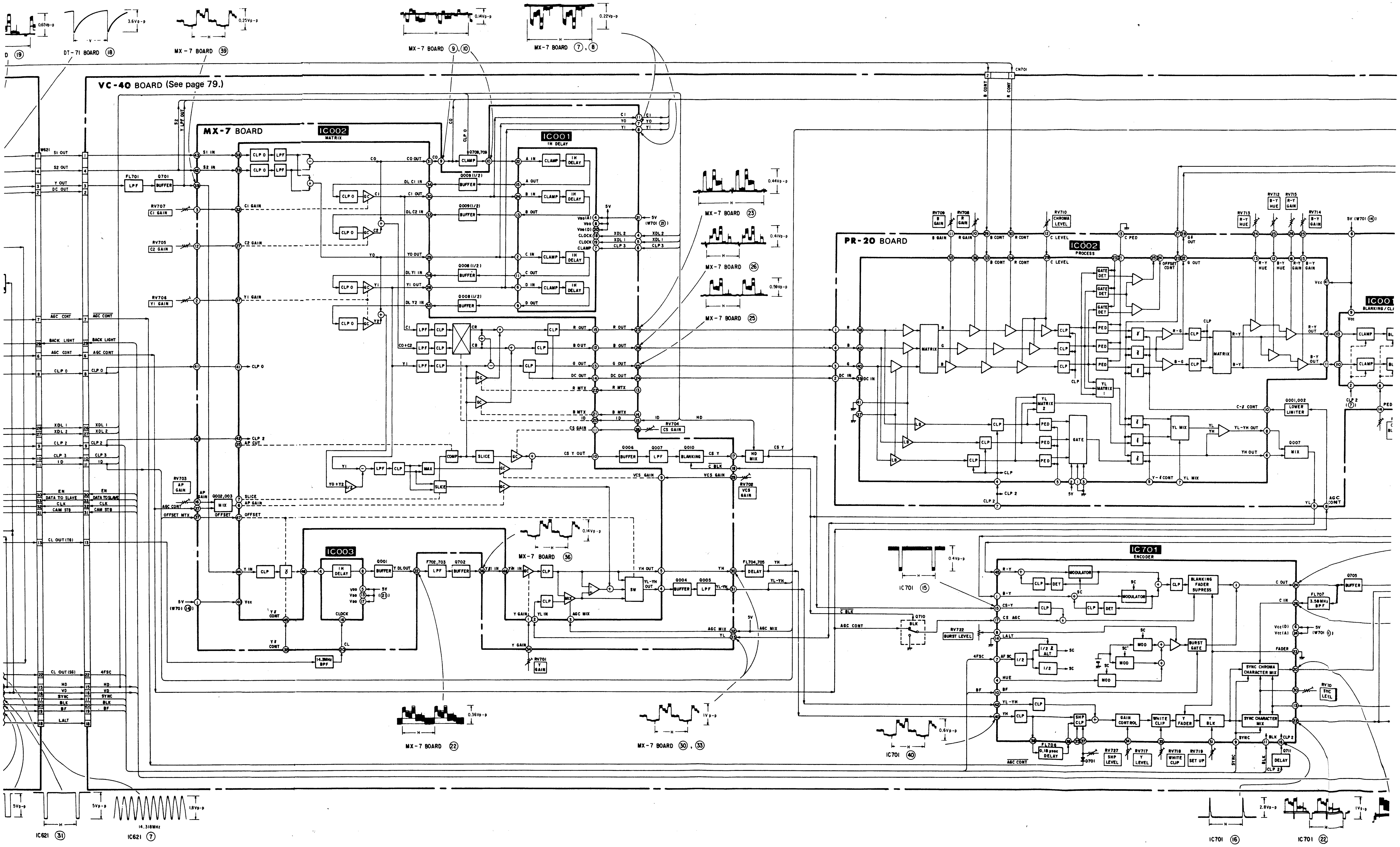


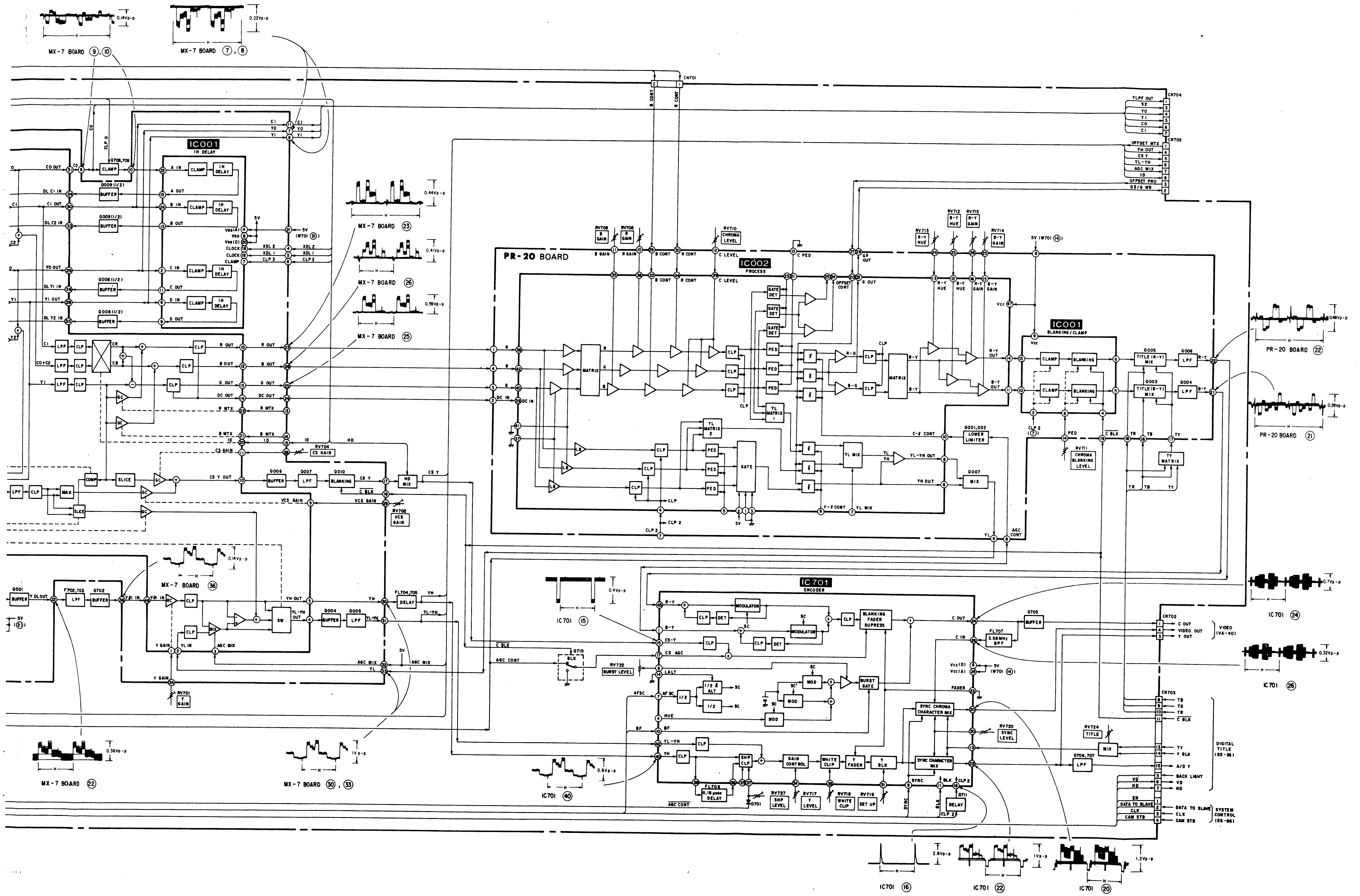
IC701
ENCODER Y TITLE MIX
YH, YL - YH
YL
Y
C
PR-20 BOARD
PROCESS ROMA TITLE MIX
R-Y
B-Y
A/DY
TY
TR,TG,TB
FC-16 BOARD
(See page 127.)
S190 - S194
TETLE1,TETLE2, MEMO,COLOR, FULL AUTO
IC190
S195,S196,S197
LIQUID CRYSTAL DISPLAY
MODE CONTROL
INNER BUS
(See page 127.)
FD-6 BOARD
S150 - S155
KEY MATRIX
FV-1 BOARD
(See page 127.)
S161, S108
KEY MATRIX
VTR MODE, CAM MODE
S160
POWER SWITCH
S169
EJECT SWITCH
(See page 127.)
EJ-4 BOARD
SS-86 BOARD
(See pages 97, 107 and 113.)
IC201, IC202
TITLE MEMORY
A/D Y
TY
TR,TG,TB
IC200
DIGITAL TITLE CONTROL
T SW, W SW
AF CONT
TELE, WIDE
LINCS
PA-13 BOARD
(See page 112.)
S990
SP/LP
EDIT SWITCH
CC DOWN
CC-7 BOARD
(See page 112.)
IC001
SERVO/MECHANISM CONTROL
D302 T/E SENS
T/E LED
TAPE TOP SENSOR
TOP SENS
T FG
S FG
D304
T-REEL FG
D303
S-REEL FG
TAPE END SENSOR
END SENS
REC PROOF
ME/MP
REC PROOF
ME/MP
S301
DEW SENS
DEW SENSOR
DEW
FP-53 BOARD
(See page 112.)
MECHANISM CONTROL
VTR PWR, CAM PWR
M
M903 LOARDING MOTOR
LOAD MOTOR (+), (-)
LOADING MOTOR DRIVE
LOAD,UNLOAD
IC003
VIDEO, AUDIO
CONTROL SIGNALS
MODE SWITCH
MODE SW 1-3
FE ON
IC301
REC/PB AMP
CH2,CH1'
CH1
DRUM
CH2,CH1'
CH1
FLYING ERASE
FLYING ERASE OSC
FE
IC006
WAVE SHAPER
DPG,DFG
CFG
M901 DRUM MOTOR
DRUM PG,FG
M
IC004
DRUM MOTOR DRIVE
D PWM
M902 CAPSTAN MOTOR
CAPSTAN FG
M
IC007
CAPSTAN MOTOR DRIVE
C PWM
BRK PLS, CAP FWD/RVS, CAP ON
SERVO
RF SW P
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2, SEL 16k/47k, TSB
REF V
VIDEO CONTROL SERIAL DATA (VSO,VCS,VSK)
S930, S931
CAM REC, CAM STBY
CAMERA STANDBY, START/STOP SWITCH
CAM REC
J930
REMOTE
EP OUT
J931
EARPHONE
(See page 116.)
SW-92 BOARD
ZM-8 BOARD
(See page 116.)
S970, S971
WIDE, TELE
ZOOM SWITCH
CAMERA POWER
32V
15V
5V
VTR POWER
SS 5V
VIDEO 5V
AUDIO 5V
EVF 5V
DC - DC CONVERTER
UNREG
VTR POWER, CAMERA POWER
BATTERY

3-3. CAMERA BLOCK DIAGRAM

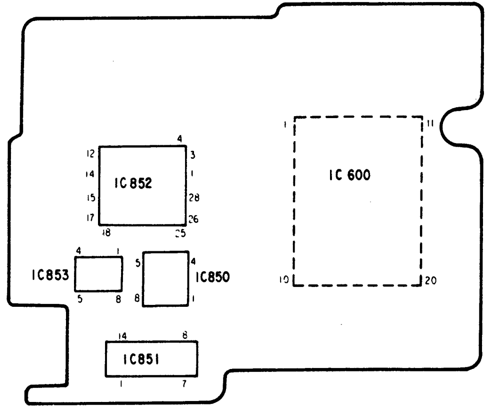
- ( ) near the board name indicates the schematic diagram page.

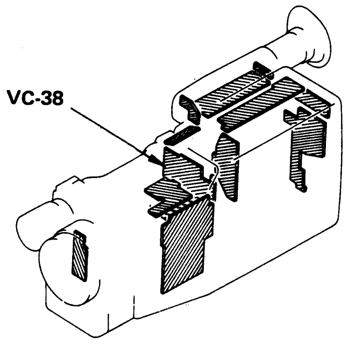

VC-38 BOARD (See page 77.)
VC-39 BOARD (See page 77.)
DT-71 BOARD
VC-40 BOARD (See page 79.)
MX-7 BOARD
IC600 CCD IMAGER
Q600 BUFFER
Q601, 602 V SUB REG
RV600 V SUB
D601
IC851 (1/3) SENSOR SW
IC850 (1/2) DC1.7V BUFFER
IC853 (1/2) INVERTER
IC852 AUTO WHITE BALANCE CONTROL
INITIAL RESET
Q855, 856, 868 D-A CONVERTER
Q850 - 852 D-A CONVERTER
Q896
RV850 AUTO WHITE BALANCE
IC850 (1/2) INTEGRATER
IC853 (1/2) WHITE BALANCE DETECT
S8850 WHITE BALANCE SENSOR
YELLOW
CYAN
IC851 (1/3) SENS SW
IC851 (1/3) DISCHARGE SW
X850 4MHz
CN851
AUTO
WID
CCD OUT
R CONT
B CONT
TP620
CN623
W620
RV620 MAX GAIN
RV621 AGC REF
IC003 SIGNAL SEPARATION AGC/IRIS CONTROL
CLAMP
S/H
PG CLP
AGC
AGC CLP
AGC CONT
LPF
BLK CLP
MIX
CS CONT
BAND GAP REG
LLA DRIVE
IRIS 6dB
WINDOW
DET LEVEL
IRIS LEVEL
S1 OUT
S2 OUT
Y OUT
DC OUT
CS OUT
CS GAIN
CS SLICE
DE OUT
AGC OUT
IRIS OUT
Q629 WINDOW PULSE GENERATOR
Q624 (1/2) 6dB/0dB SWITCH
Q623 AGC DET
Q624 (1/2) AGC SWITCH
RV623 AGC
Q630 AGC CONT BUFFER
IC002 V DRIVE
IC001 TIMING GENERATOR
D006 CLAMP
D004 CLAMP
D007 (1/2)
D005 (1/2)
D003 -14V RECT
Q001 9V REG
Q006 10V REG
Q002 - 005
PG DRIVE
Q625 - 627 V SUB DRIVE
1/2
X620 28.6363MHz OSC
IC620 (1/2) IRIS DRIVE
Q622 IRIS DET
Q621 AMP
IC620 (1/2)
D626
RV622 IRIS
CN620
IRIS DRIVE ⊕
IRIS DRIVE ⊖
IRIS CONT ⊕
IRIS CONT ⊖
IRIS MOTOR
IC621 SYNC GENERATOR
SYNC GENERATOR
PHASE COMP
DIVIDER
CL OUT
HD
VD
SYNC
BLK
RF
FLD
LALT
W621
FL701 LPF
Q701 BUFFER
RV707 C1 GAIN
RV705 C2 GAIN
RV706 Y1 GAIN
RV703 AP GAIN
AGC CONT
BACK LIGHT
CLP O
XDL 1
XDL 2
CLP 2
CLP 3
ID
EN
DATA TO SLAVE
CLK
CAM STB
CL OUT (T6)
CL OUT (S6)
4FSC
SLICE
AP GAIN
OFFSET
OFFSET MTX
AP CUT
Y IN
Y/Z CONT
H: 0.1μsec/div
V: 5V/div
0.24Vp-p
10Vp-p
0.67Vp-p
0.56Vp-p
0.65Vp-p
3.6Vp-p
0.25Vp-p
5Vp-p
3.9Vp-p
2.8Vp-p
1.8Vp-p
28.6363MHz
14.318MHz
IC600 ④
IC600 ①
IC600 ②
IC600 ③, ⑥
IC600 ⑰
IC600 ⑱
IC600 ⑲
Q600 ⑤
DT-71 BOARD ㉛
DT-71 BOARD ㉙
DT-71 BOARD ㉘
DT-71 BOARD ⑲
DT-71 BOARD ⑱
MX-7 BOARD ㊴
DT-71 BOARD ⑩, ⑪
DT-71 BOARD ⑫, ⑮, ⑯
DT-71 BOARD ⑬
DT-71 BOARD ⑦
DT-71 BOARD ⑥
DT-71 BOARD ⑧
DT-71 BOARD ⑨
IC621 ①
IC621 ㉜
IC621 ㉛
IC621 ⑦


VC-40 BOARD (See page 79.)
MX-7 BOARD
IC002 MATRIX
IC001 1H DELAY
IC003
PR-20 BOARD
IC002 PROCESS
IC701 ENCODER
IC001 BLANKING/CL
DT-71 BOARD ⑱
MX-7 BOARD ㊴
MX-7 BOARD ⑨, ⑩
MX-7 BOARD ⑦, ⑧
MX-7 BOARD ㉓
MX-7 BOARD ㉖
MX-7 BOARD ㉕
MX-7 BOARD ㊱
MX-7 BOARD ㉒
MX-7 BOARD ㉚, ㉝
IC701 ⑮
IC701 ㊵
IC701 ⑯
IC701 ㉒
IC621 ㉛
IC621 ⑦
0.65Vp-p
3.6Vp-p
0.25Vp-p
0.14Vp-p
0.22Vp-p
0.44Vp-p
0.41Vp-p
0.59Vp-p
0.14Vp-p
0.36Vp-p
1Vp-p
0.4Vp-p
0.6Vp-p
5Vp-p
1.8Vp-p
2.8Vp-p
14.318MHz
S1 OUT
S2 OUT
Y OUT
DC OUT
AGC CONT
BACK LIGHT
CLP 0
XDL 1
XDL 2
CLP 2
CLP 3
ID
EN
DATA TO SLAVE
CLK
CAM STB
CL OUT (T6)
CL OUT (S6)
4FSC
HD
VD
SYNC
BLK
BF
LALT
FL701
LPF
Q701
BUFFER
RV707 C1 GAIN
RV705 C2 GAIN
RV706 Y1 GAIN
RV703 AP GAIN
Q002,003 MIX
OFFSET MTX
S1 IN
S2 IN
C1 GAIN
C2 GAIN
Y1 GAIN
CLP 0
LPF
GC
CO OUT
DL C1 IN
C1 OUT
DL C2 IN
YO OUT
DLY1 IN
Y1 OUT
DL Y2 IN
Q009 (1/2) BUFFER
Q008 (1/2) BUFFER
Q708,709 CLAMP
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
CLAMP
1H DELAY
5V (W701 ㉑)
CLOCK
XDL 2
XDL 1
CLP 3
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
CS GAIN
RV704 CS GAIN
CS Y OUT
COMP
SLICE
MAX
Y0+Y2
Q006 BUFFER
Q007 LPF
Q010 BLANKING
CS Y
C BLK
HD MIX
VCS GAIN
RV702 VCS GAIN
Y IN
Vcc
Y♯ CONT
CLOCK
CL
14.3MHz BPF
Q001 BUFFER
DL OUT
F702,703 LPF
Q702 BUFFER
Y♯1 IN
YH IN
Y GAIN
YL IN
AGC MIX
RV701 Y GAIN
SW
YH OUT
YL-YH OUT
Q004 BUFFER
Q005 LPF
FL704,705 DELAY
YH
YL
AP GAIN
AP CUT
SLICE
OFFSET
CN701
B CONT
R CONT
RV709 B GAIN
RV708 R GAIN
RV710 CHROMA LEVEL
C LEVEL
C PED
G8 OUT
OFFSET CONT
RV713 R-Y HUE
RV712 B-Y HUE
RV715 R-Y GAIN
RV714 B-Y GAIN
5V (W701 ⑭)
DC IN
MATRIX
GATE DET
PED
YL MATRIX 1
YL MATRIX 2
GATE
R-G
B-G
R-Y
B-Y
R-Y OUT
B-Y OUT
C-♯ CONT
Q001,002 LOWER LIMITER
YL MIX
YL-YH OUT
YH OUT
Q007 MIX
Y-♯ CONT
CLP 2
AGC CONT
CLAMP
MODULATOR
SC
DET
BLANKING FADER SUPRESS
C OUT
C IN
Q705 BUFFER
FL707 3.58MHz BPF
CS-Y
CS AGC
Q710 BLK
RV722 BURST LEVEL
1/2 & ALT
MOD
BURST GATE
AF SC
HUE
Vcc(D)
Vcc(A)
FADER
SYNC CHROMA CHARACTER MIX
RV30 SYNC LEVEL
SYNC CHARACTER MIX
SHP CLP
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
FL708 0.18 μsec DELAY
RV727 SHP LEVEL
RV717 Y LEVEL
RV718 WHITE CLIP
RV719 SET UP
Q711 DELAY
Q701

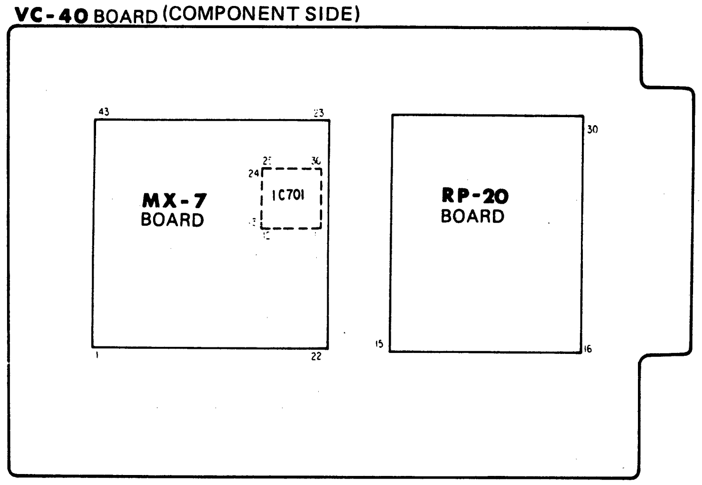

MX-7 BOARD ⑨, ⑩
0.14Vp-p
MX-7 BOARD ⑦, ⑧
0.22Vp-p
CN701
B CONT
R CONT
CN704
YLPF OUT
S2
YO
YI
CO
CI
CN705
OFFSET MTX
YH OUT
CS Y
YL-YH
AGC MIX
ID
OFFSET PRO
GS/G WB
IC001
IN DELAY
CLAMP
IN DELAY
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
Q708,709
Q009(1/2)
Q008(1/2)
BUFFER
CO OUT
DL CI IN
CI OUT
DL C2 IN
YO OUT
DL YI IN
YI OUT
DL Y2 IN
CLP O
XDL 2
XDL 1
CLP 3
5V
(W701 ㉑)
MX-7 BOARD ㉓
0.44Vp-p
MX-7 BOARD ㉖
0.41Vp-p
MX-7 BOARD ㉕
0.59Vp-p
LPF
CLP
CR
CB
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
ID
CS GAIN
RV704
CS GAIN
HD
SLICE
MAX
COMP
GC
CS Y OUT
Q006
Q007
Q010
BUFFER
BLANKING
CS Y
C BLK
HD MIX
VCS GAIN
RV702
VCS GAIN
PR-20 BOARD
IC002
PROCESS
RV709 B GAIN
RV708 R GAIN
RV710 CHROMA LEVEL
RV712 B-Y HUE
RV715 B-Y GAIN
RV713 R-Y HUE
RV714 B-Y GAIN
C LEVEL
C PED
G8 OUT
OFFSET CONT
G OUT
MATRIX
GATE DET
PED
γ
R-G
B-G
R-Y
B-Y
R-Y OUT
B-Y OUT
Vcc
5V (W701 ⑭)
IC001
BLANKING/CLAMP
CLAMP
BLANKING
Q005
TITLE (R-Y) MIX
Q006
Q003
TITLE (B-Y) MIX
Q004
PR-20 BOARD ㉒
0.48Vp-p
PR-20 BOARD ㉑
0.28Vp-p
YL MATRIX 2
YL MATRIX 1
LB
GATE
YL MIX
YL-YH OUT
YH OUT
Q007 MIX
C-γ CONT
Q001,002
LOWER LIMITER
PED
RV711 CHROMA BLANKING LEVEL
C BLK
TR
TB
TY
TY MATRIX
Y-γ CONT
CLP 2
AGC CONT
YL
Q001
BUFFER
Y DLOUT
F702,703
Q702
MX-7 BOARD ㊱
0.14Vp-p
YH IN
YL-YH OUT
SW
MIX
Q004
Q005
Y GAIN
YL IN
AGC MIX
RV701 Y GAIN
FL704,705
DELAY
YH
YL-YH
C BLK
AGC CONT
Q710
BLK
RV722 BURST LEVEL
IC701 ⑮
0.4Vp-p
IC701
ENCODER
MODULATOR
DET
SC
CS-Y
CS AGC
LALT
1/2 ALT
1/2
4FSC
AF SC
HUE
MOD
BURST GATE
BLANKING FADER SUPRESS
C OUT
C IN
Q705
BUFFER
FL707
3.58MHz BPF
Vcc(D)
Vcc(A)
5V (W701 ⑭)
FADER
SYNC CHROMA CHARACTER MIX
RV720 SYNC LEVEL
SYNC CHARACTER MIX
BF
YL-YH
YH
SHP CLP
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
FL706
0.18μsec DELAY
RV727 SHP LEVEL
RV717 Y LEVEL
RV718 WHITE CLIP
RV719 SET UP
SYNC
BLK
CLP 2
Q711 DELAY
Q701
RV724 TITLE
Q706,707
CN702
C OUT
VIDEO OUT
Y OUT
VIDEO (VA-40)
CN703
TB
TG
TR
C BLK
TY
Y BLK
A/D Y
BACK LIGHT
VD
HD
DIGITAL TITLE (SS-36)
EN
DATA TO SLAVE
CLK
CAM STB
SYSTEM CONTROL (SS-86)
IC701 ㉔
0.7Vp-p
IC701 ㉖
0.32Vp-p
MX-7 BOARD ㉒
0.36Vp-p
MX-7 BOARD ㉚, ㉝
1Vp-p
IC701 ㊵
0.6Vp-p
IC701 ⑯
2.8Vp-p
IC701 ㉒
1Vp-p
IC701 ⑳
1.2Vp-p

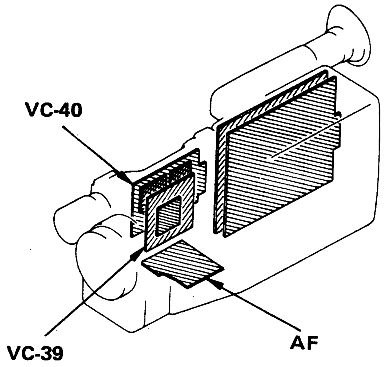
VC-38 BOARD (CONDUCTOR SIDE)


IC852
IC600
IC853
IC850
IC851

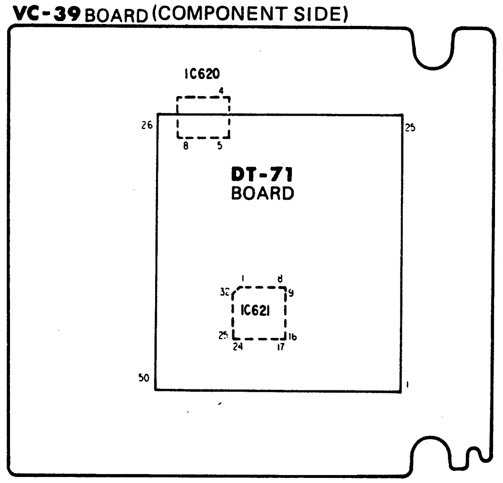


VC-40 BOARD (COMPONENT SIDE)


MX-7
BOARD
IC701
RP-20
BOARD


VC-40
VC-39
AF

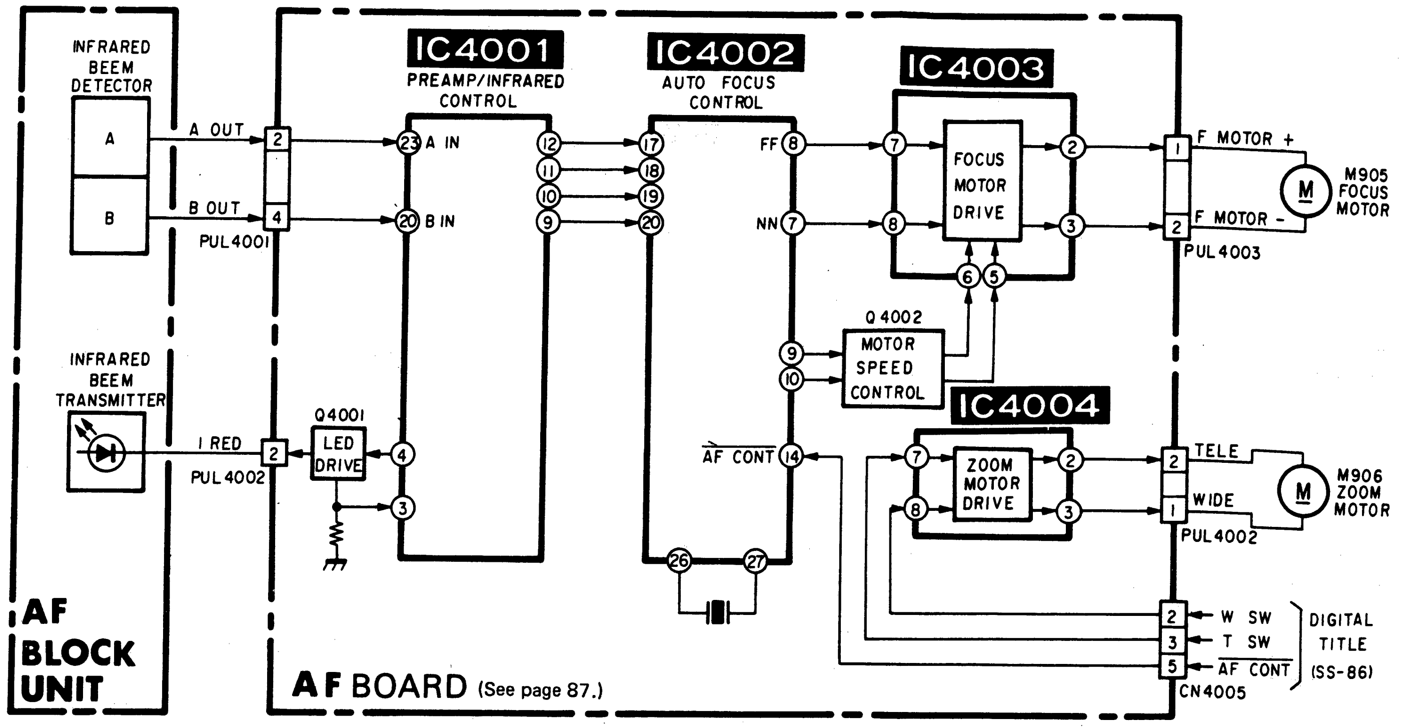
VC-39 BOARD (COMPONENT SIDE)


IC620
DT-71
BOARD
IC621

- Components on the rear side indicated by "- - -" line.

3-4. AUTO FOCUS BLOCK DIAGRAM

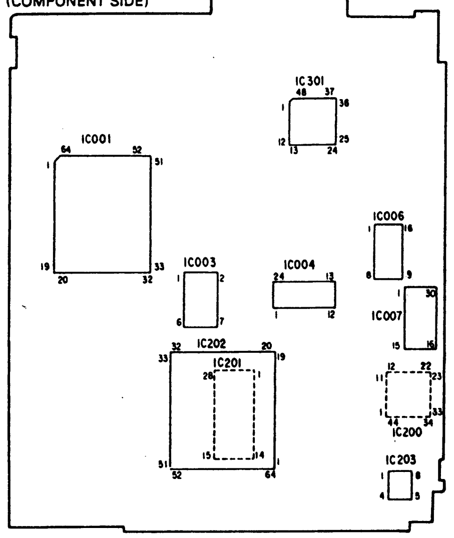
- ( ) near the board name indicates the schematic diagram page.


INFRARED BEEM DETECTOR
A
B
A OUT
B OUT
PUL4001
INFRARED BEEM TRANSMITTER
I RED
PUL4002
AF BLOCK UNIT
IC4001
PREAMP/INFRARED CONTROL
A IN
B IN
Q4001
LED DRIVE
IC4002
AUTO FOCUS CONTROL
FF
NN
AF CONT
IC4003
FOCUS MOTOR DRIVE
Q4002
MOTOR SPEED CONTROL
IC4004
ZOOM MOTOR DRIVE
F MOTOR +
F MOTOR –
PUL4003
M905 FOCUS MOTOR
TELE
WIDE
PUL4002
M906 ZOOM MOTOR
W SW
T SW
AF CONT
CN4005
DIGITAL TITLE (SS-86)
AF BOARD (See page 87.)

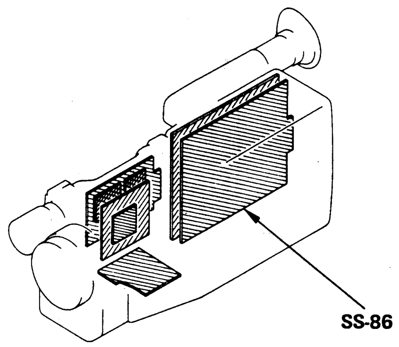
3-5. DIGITAL TITLER BLOCK DIAGRAM

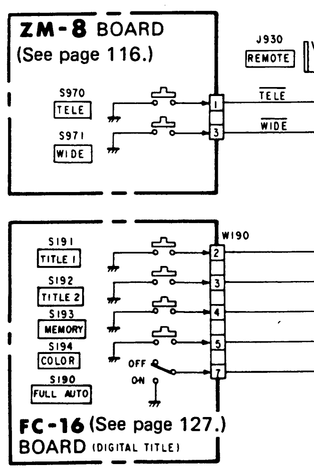
- ( ) near the board name indicates the schematic diagram page.

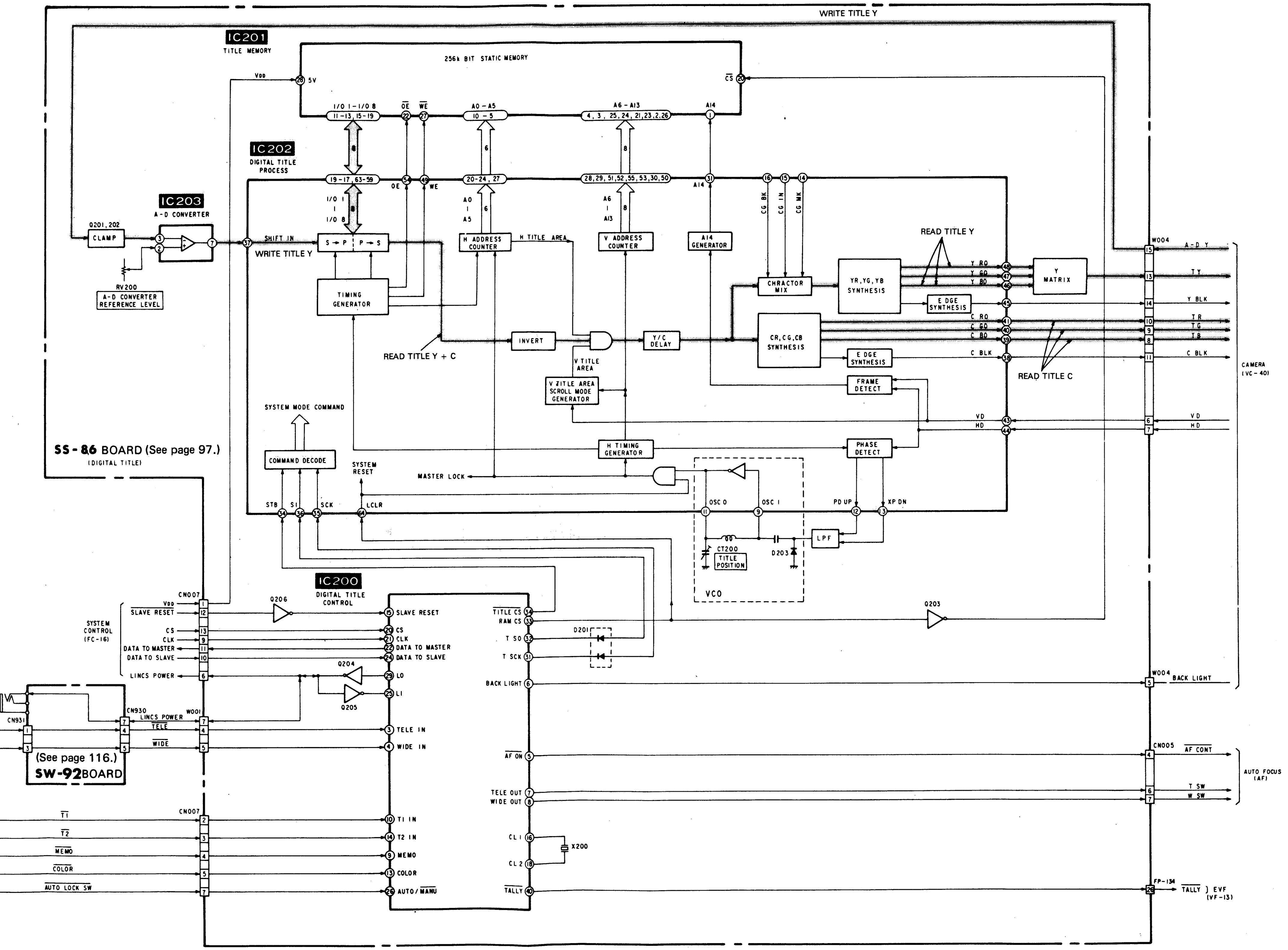
SS-86BOARD
(COMPONENT SIDE)


IC001
IC301
IC006
IC003
IC004
IC007
IC202
IC201
IC200
IC203

- Components on the rear side indicated by "- - -" line.

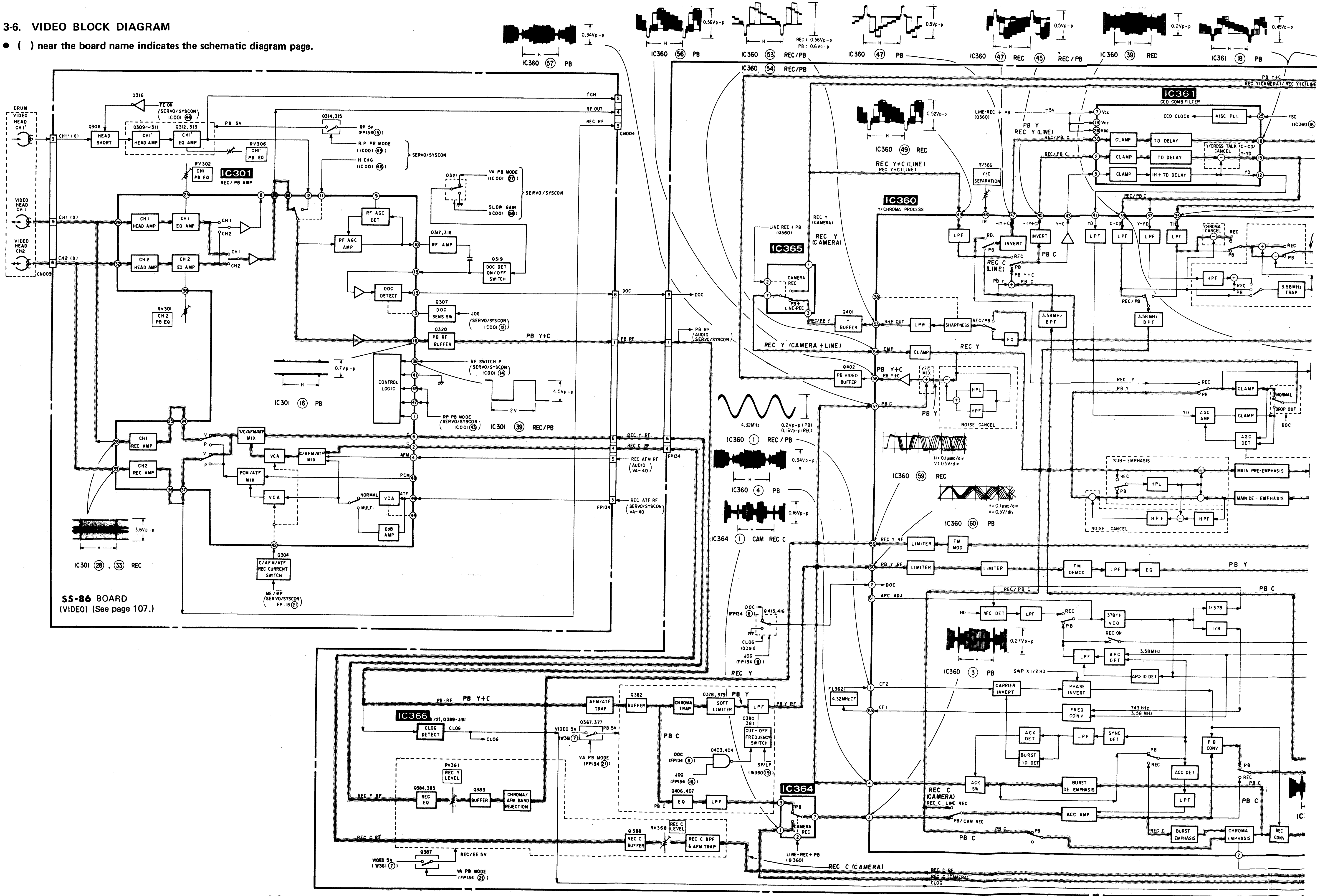


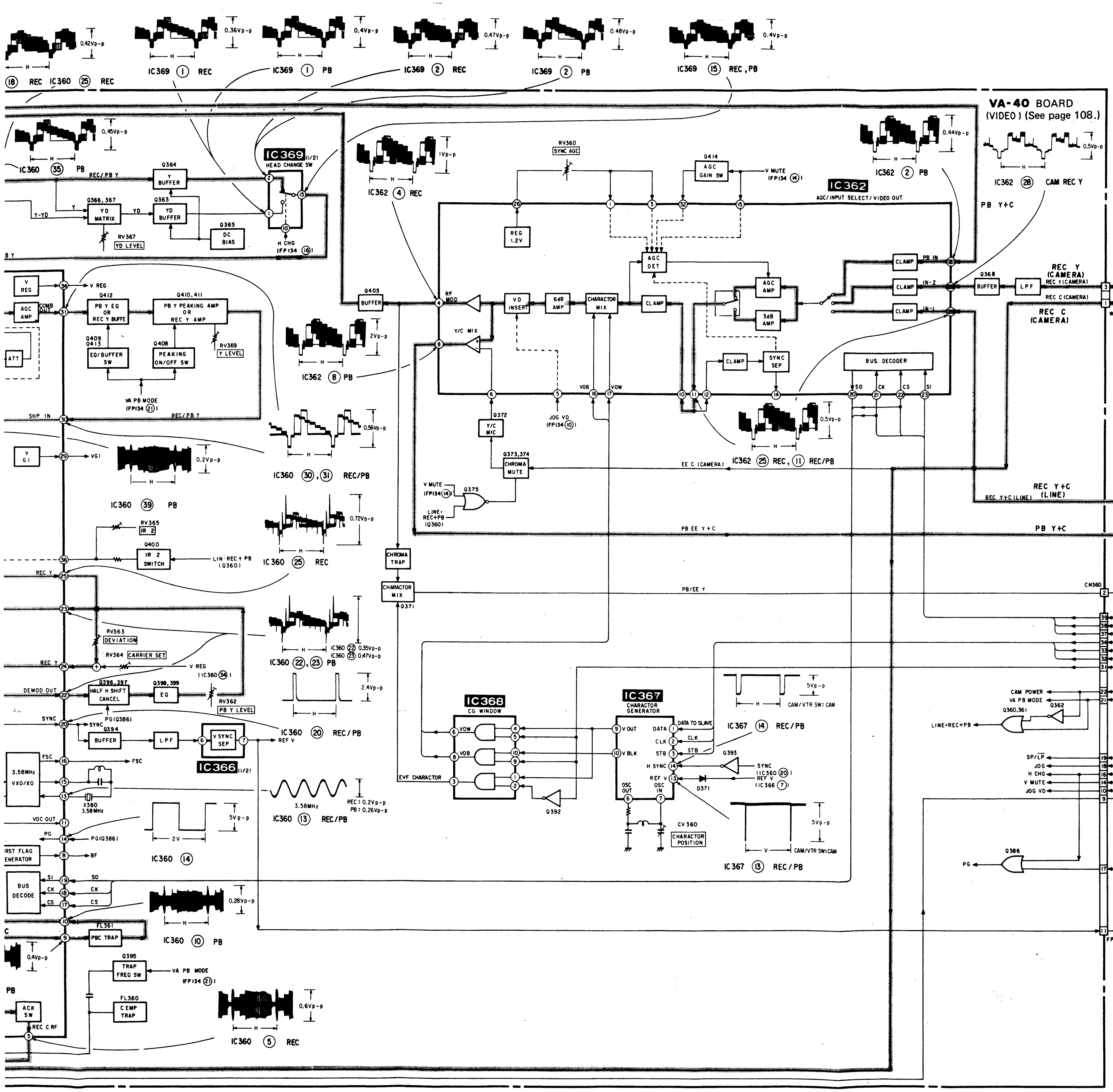



WRITE TITLE Y
IC201
TITLE MEMORY
256k BIT STATIC MEMORY
VDD
5V
CS
I/O 1 - I/O 8
OE
WE
A0 - A5
A6 - A13
A14
IC202
DIGITAL TITLE PROCESS
IC203
A-D CONVERTER
Q201, 202
CLAMP
RV200
A-D CONVERTER REFERENCE LEVEL
SHIFT IN
WRITE TITLE Y
S → P
P → S
TIMING GENERATOR
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
A14 GENERATOR
CG BK
CG IN
CG WK
READ TITLE Y
CHRACTOR MIX
YR, YG, YB SYNTHESIS
Y MATRIX
E DGE SYNTHESIS
CR, CG, CB SYNTHESIS
E DGE SYNTHESIS
FRAME DETECT
READ TITLE C
READ TITLE Y + C
INVERT
Y/C DELAY
V TITLE AREA
V TITLE AREA SCROLL MODE GENERATOR
SYSTEM MODE COMMAND
COMMAND DECODE
SYSTEM RESET
MASTER LOCK
H TIMING GENERATOR
PHASE DETECT
OSC O
OSC I
PD UP
XP DN
LPF
CT200
TITLE POSITION
D203
VCO
STB
SI
SCK
LCLR
SS-86 BOARD (See page 97.)
(DIGITAL TITLE)
Y RO
Y GO
Y BO
Y BLK
C RO
C GO
C BO
C BLK
VD
HD
W004
A-D Y
T Y
Y BLK
T R
T G
T B
C BLK
VD
HD
CAMERA (VC-40)
IC200
DIGITAL TITLE CONTROL
Q206
CN007
VDD
SLAVE RESET
SYSTEM CONTROL (FC-16)
CS
CLK
DATA TO MASTER
DATA TO SLAVE
LINCS POWER
SLAVE RESET
CS
CLK
DATA TO MASTER
DATA TO SLAVE
Q204
Q205
LO
LI
TITLE CS
RAM CS
T SO
T SCK
D201
Q203
BACK LIGHT
W004
BACK LIGHT
ZM-8 BOARD
(See page 116.)
S970
TELE
S971
WIDE
J930
REMOTE
CN931
TELE
WIDE
CN930
W001
LINCS POWER
TELE
WIDE
(See page 116.)
SW-92BOARD
TELE IN
WIDE IN
AF ON
CN005
AF CONT
AUTO FOCUS (AF)
TELE OUT
WIDE OUT
T SW
W SW
S191
TITLE 1
S192
TITLE 2
S193
MEMORY
S194
COLOR
S190
FULL AUTO
OFF
ON
W190
T1
T2
MEMO
COLOR
AUTO LOCK SW
CN007
T1 IN
T2 IN
MEMO
COLOR
AUTO/MANU
CL 1
CL 2
X200
TALLY
FP-134
TALLY } EVF (VF-13)
FC-16 (See page 127.)
BOARD (DIGITAL TITLE)

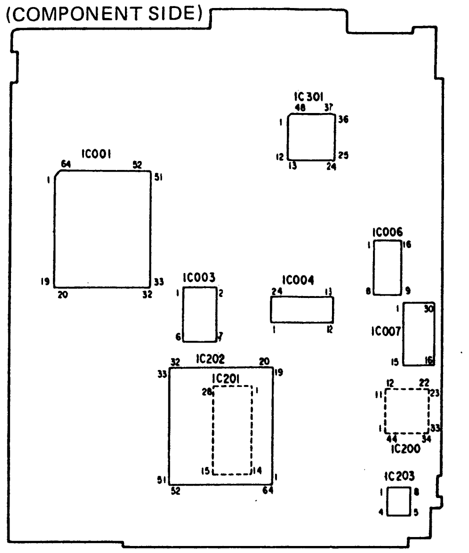
3-6. VIDEO BLOCK DIAGRAM

- ( ) near the board name indicates the schematic diagram page.

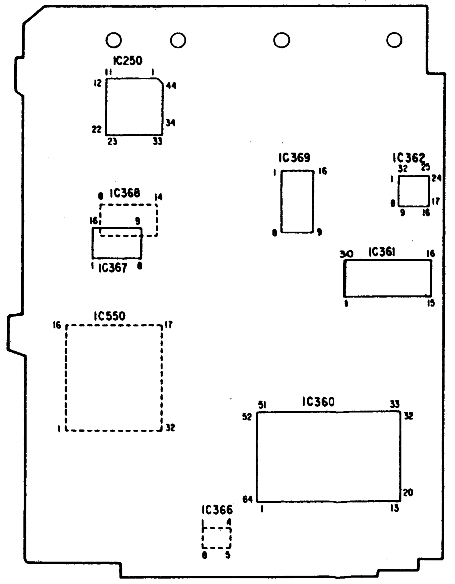

IC360 (57) PB
IC360 (56) PB
IC360 (53) REC/PB
IC360 (54) REC/PB
IC360 (47) PB
IC360 (47) REC (45) REC/PB
IC360 (39) REC
IC361 (18) PB
0.34Vp-p
0.56Vp-p
REC: 0.56Vp-p
PB: 0.6Vp-p
0.5Vp-p
0.2Vp-p
0.45Vp-p
DRUM
VIDEO HEAD CH1'
VIDEO HEAD CH1
VIDEO HEAD CH2
CN003
CN004
Q316
FE ON (SERVO/SYSCON) IC001 (44)
Q308 HEAD SHORT
Q309~311 CH1' HEAD AMP
Q312, 313 CH1' EQ AMP
RV306 CH1' PB EQ
RV302 CH1 PB EQ
IC301 REC/PB AMP
Q314, 315
RP 5V (FP134 (15))
R.P PB MODE (IC001 (43))
H CHG (IC001 (48))
SERVO/SYSCON
PB 5V
I'CH
RF OUT
REC RF
CH1 HEAD AMP
CH1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
RF AGC DET
RF AGC AMP
Q317, 318 RF AMP
Q319 DOC DET ON/OFF SWITCH
Q321
VA PB MODE (IC001 (27))
SLOW GAIN (IC001 (56))
DOC DETECT
Q307 DOC SENS. SW
JOG (SERVO/SYSCON) IC001 (12)
Q320 PB RF BUFFER
PB Y+C
DOC
PB RF
RV301 CH2 PB EQ
CONTROL LOGIC
RF SWITCH P (SERVO/SYSCON) IC001 (14)
RP PB MODE (SERVO/SYSCON) IC001 (43)
0.7Vp-p
4.5Vp-p
2V
IC301 (16) PB
IC301 (39) REC/PB
CH1 REC AMP
CH2 REC AMP
Y/C/AFM/ATF MIX
VCA
C/AFM/ATF MIX
PCM/ATF MIX
NORMAL
MULTI
6dB AMP
AFM
PCM
ATF
Q304 C/AFM/ATF REC CURRENT SWITCH
ME/MP (SERVO/SYSCON) FP118 (21)
REC Y RF
REC C RF
REC AFM RF (AUDIO) (VA-40)
REC ATF RF (SERVO/SYSCON) (VA-40)
FP134
PB RF (AUDIO) (SERVO/SYSCON)
3.6Vp-p
IC301 (28), (33) REC
SS-86 BOARD (VIDEO) (See page 107.)
IC361 CCD COMB FILTER
CCD CLOCK
4fsc PLL
FSC (IC360 (6))
Vcc
VDD
CLAMP
TD DELAY
1H + TD DELAY
Y/CROSS TALK CANCEL
C-CD
Y-YD
YD
PB Y+C
REC Y(CAMERA)/REC Y+C(LINE)
LINE-REC + PB (Q360)
PB Y
REC Y (LINE)
REC/PB Y
REC/PB C
RV366 Y/C SEPARATION
IC360 (49) REC
0.52Vp-p
REC Y+C (LINE)
IC360 Y/CHROMA PROCESS
LPF
INVERT
REC C (LINE)
PB C
PB Y+C
CHROMA CANCEL
HPF
3.58MHz TRAP
3.58MHz BPF
REC Y (CAMERA)
LINE REC + PB (Q360)
IC365
CAMERA REC
PB + LINE-REC
Q401 Y BUFFER
SHP OUT
SHARPNESS
EQ
EMP
REC Y (CAMERA + LINE)
REC Y
Q402 PB VIDEO BUFFER
Y/C MIX
NOISE CANCEL
HPL
HPF
AGC AMP
AGC DET
NORMAL
DROP OUT
DOC
SUB-EMPHASIS
MAIN PRE-EMPHASIS
MAIN DE-EMPHASIS
4.32MHz
0.2Vp-p (PB)
0.16Vp-p (REC)
IC360 (1) REC/PB
0.34Vp-p
IC360 (4) PB
0.16Vp-p
IC364 (1) CAM REC C
IC360 (59) REC
IC360 (60) PB
H: 0.1μsec/div
V: 0.5V/div
LIMITER
FM MOD
FM DEMOD
APC ADJ
Q415, 416
CLOG (Q391)
JOG (FP134 (18))
AFC DET
378fH VCO
1/378
1/8
REC ON
3.58MHz
APC DET
APC-ID DET
0.27Vp-p
IC360 (3) PB
SWP X 1/2 HD
FL362 4.32MHz CF
CF2
CF1
CARRIER INVERT
PHASE INVERT
FREQ CONV
743kHz
3.58MHz
ACK DET
BURST ID DET
SYNC DET
PB CONV
ACK SW
BURST DE EMPHASIS
ACC DET
ACC AMP
REC C (CAMERA)
REC C LINE REC
PB/CAM REC
BURST EMPHASIS
CHROMA EMPHASIS
REC CONV
IC366
CLOG DETECT
Q(1/2), Q389-391
AFM/ATF TRAP
Q382 BUFFER
CHROMA TRAP
Q378, 379 SOFT LIMITER
Q380, 381 CUT-OFF FREQUENCY SWITCH
VIDEO 5V (W361 (7))
Q367, 377
VA PB MODE (FP134 (21))
Q403, 404
SP/LP (W360 (9))
Q406, 407
IC364
LINE-REC + PB (Q360)
RV361 REC Y LEVEL
Q384, 385 REC EQ
Q383 BUFFER
CHROMA/AFM BAND REJECTION
Q388 REC C BUFFER
RV368 REC C LEVEL
REC C BPF & AFM TRAP
Q387
REC/EE 5V
REC C RF
REC C (CAMERA)
CLOG


VA-40 BOARD
(VIDEO) (See page 108.)
IC369 (1/2) HEAD CHANGE SW
IC362 AGC/INPUT SELECT/VIDEO OUT
IC368 CG WINDOW
IC367 CHARACTOR GENERATOR
IC366 (1/2)
IC369 ① REC
IC369 ① PB
IC369 ② REC
IC369 ② PB
IC369 ⑮ REC, PB
IC360 ㉟ PB
IC362 ④ REC
IC362 ② PB
IC362 ㉘ CAM REC Y
IC362 ⑧ PB
IC362 ㉕ REC, ⑪ REC/PB
IC360 ㉚, ㉛ REC/PB
IC360 ㊴ PB
IC360 ㉕ REC
IC360 ㉒, ㉓ PB
IC360 ⑳ REC/PB
IC360 ⑬ REC/PB
IC360 ⑭
IC360 ⑩ PB
IC360 ⑤ REC
IC367 ⑭ REC/PB
IC367 ⑬ REC/PB
Y BUFFER
YD MATRIX
YD BUFFER
DC BIAS
RV367 YD LEVEL
PB Y EQ OR REC Y BUFFE
PB Y PEAKING AMP OR REC Y AMP
EQ/BUFFER SW
PEAKING ON/OFF SW
RV369 Y LEVEL
VA PB MODE (FP134 ㉑)
IR 2 SWITCH
RV365 IR 2
RV363 DEVIATION
RV364 CARRIER SET
HALF H SHIFT CANCEL
EQ
RV362 PB Y LEVEL
BUFFER
LPF
V SYNC SEP
3.58MHz VXO/XO
BUS DECODE
PBC TRAP
TRAP FREQ SW
C EMP TRAP
REG 1.2V
RV360 SYNC AGC
AGC GAIN SW
AGC DET
AGC AMP
3dB AMP
VD INSERT
6dB AMP
CHARACTOR MIX
CLAMP
SYNC SEP
BUS DECODER
Y/C MIX
Y/C MIC
CHROMA MUTE
CHROMA TRAP
CHARACTOR MIX
CHARACTOR POSITION
CV360
REC Y (CAMERA)
REC C (CAMERA)
REC Y+C (LINE)
PB Y+C
CAMERA (VC-40)
J360 AV IN (VIDEO)
J361 AV OUT (VIDEO)
EVF (VF-13)
SERVO/SYSCON (SS-86)
V CK
V CS
V SO
DATA TO SLAVE
CLK
STB
CG WIND
CAM POWER
VA PB MODE
SP/LP
JOG
H CHG
V MUTE
JOG VD
CLOG
RF SW PULSE
REF V
FP134
CN360
W362

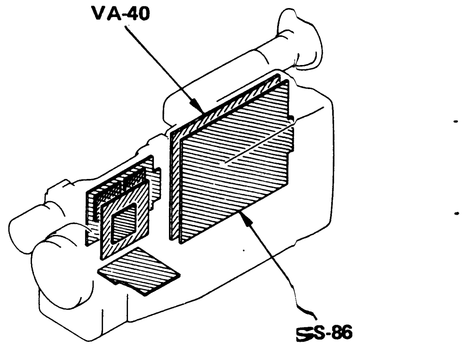
SS-86BOARD
(COMPONENT SIDE)


IC001
IC301
IC003
IC004
IC006
IC007
IC202
IC201
IC200
IC203

VA-40 BOARD (CONDUCTOR SIDE)


IC250
IC369
IC362
IC368
IC367
IC361
IC550
IC360
IC366

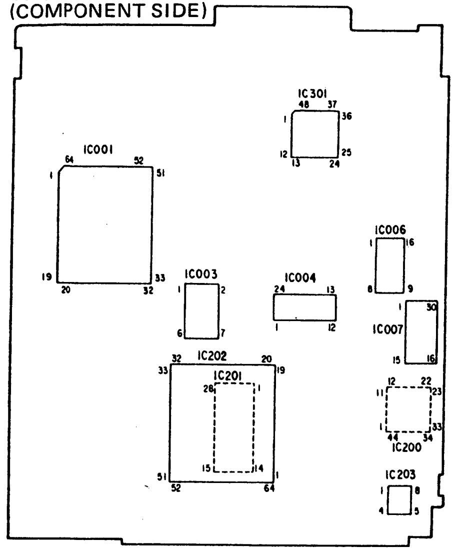
- **Components on the rear side indicated by "- - -" line.**



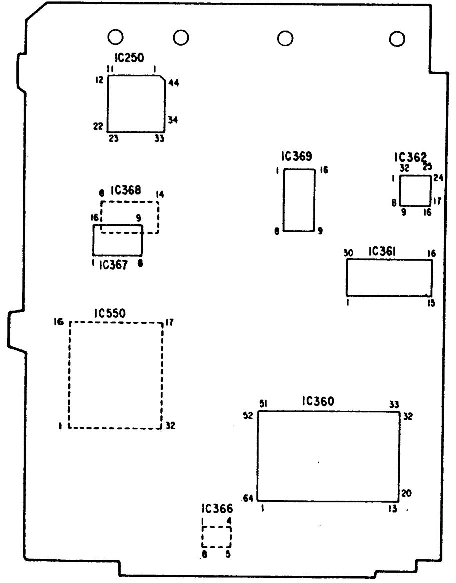
3-7. SERVO/SYSTEM CONTROL BLOCK DIAGRAM

- ( ) near the board name indicates the schematic diagram page.

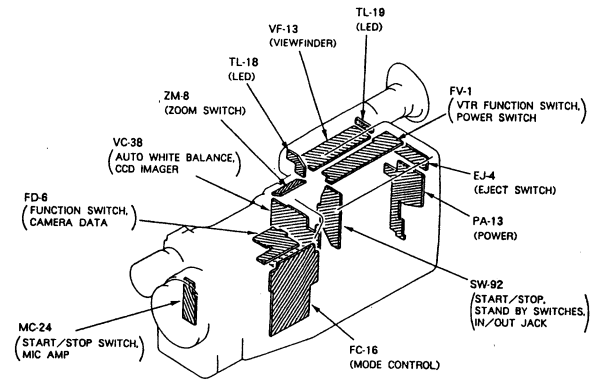
SS-86BOARD
(COMPONENT SIDE)

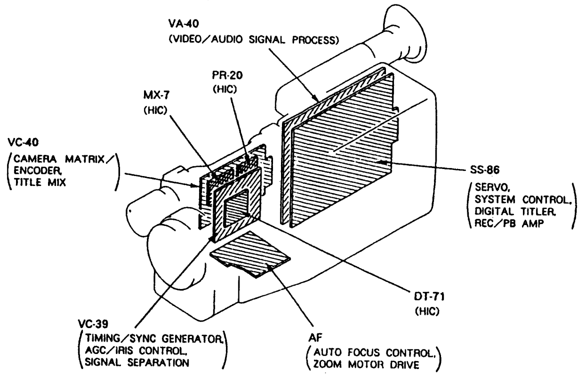

IC301
IC001
IC006
IC003
IC004
IC007
IC202
IC201
IC200
IC203

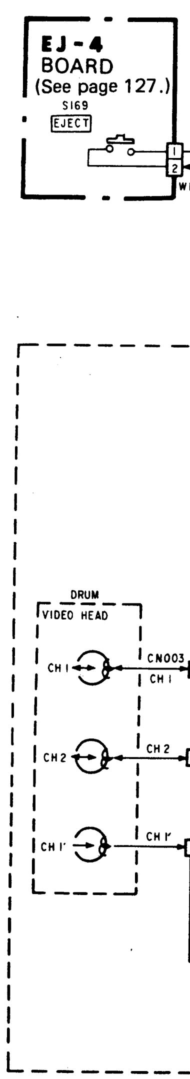
VA-40 BOARD(CONDUCTOR SIDE)

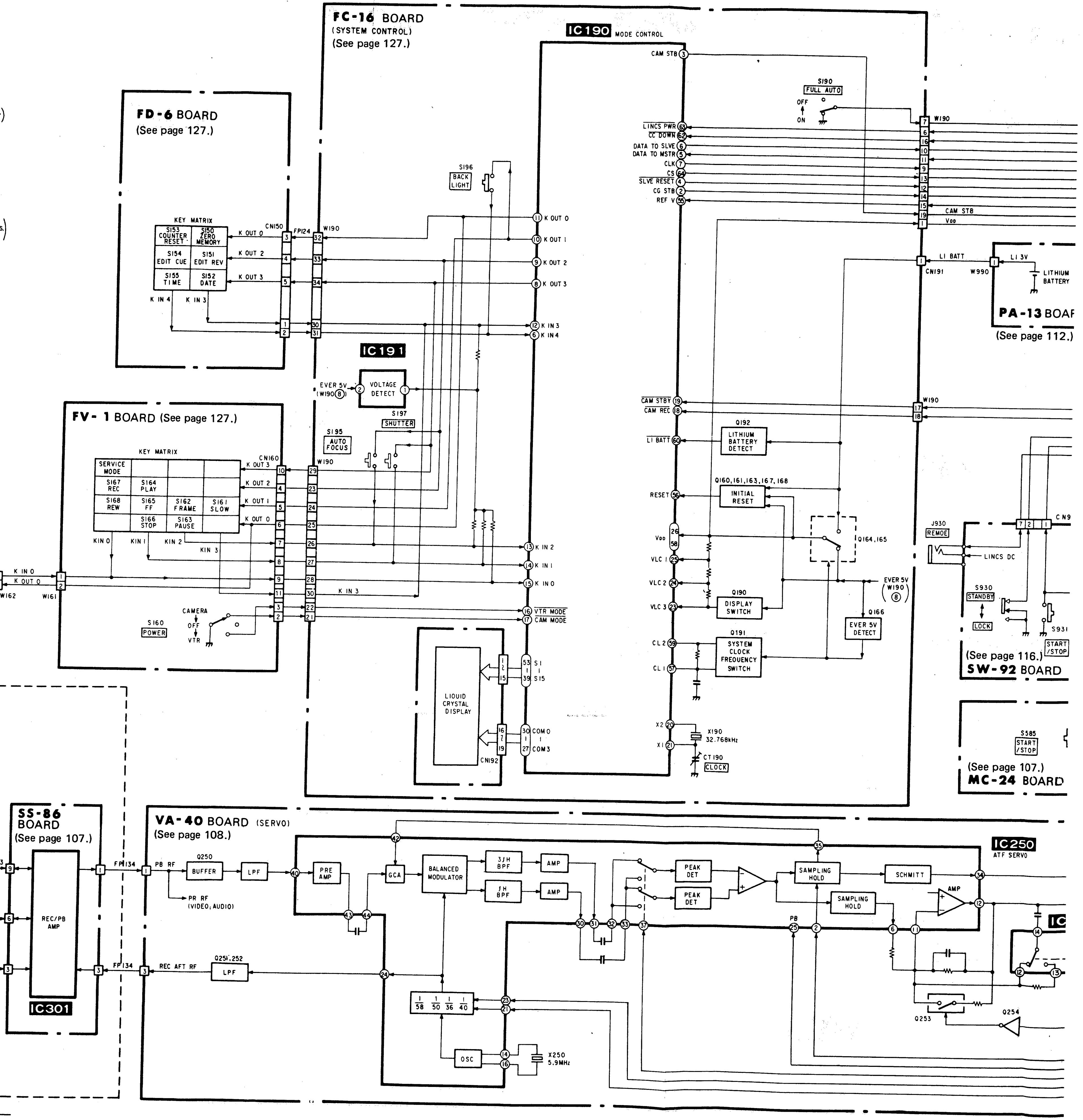

IC250
IC369
IC362
IC368
IC367
IC361
IC550
IC360
IC366

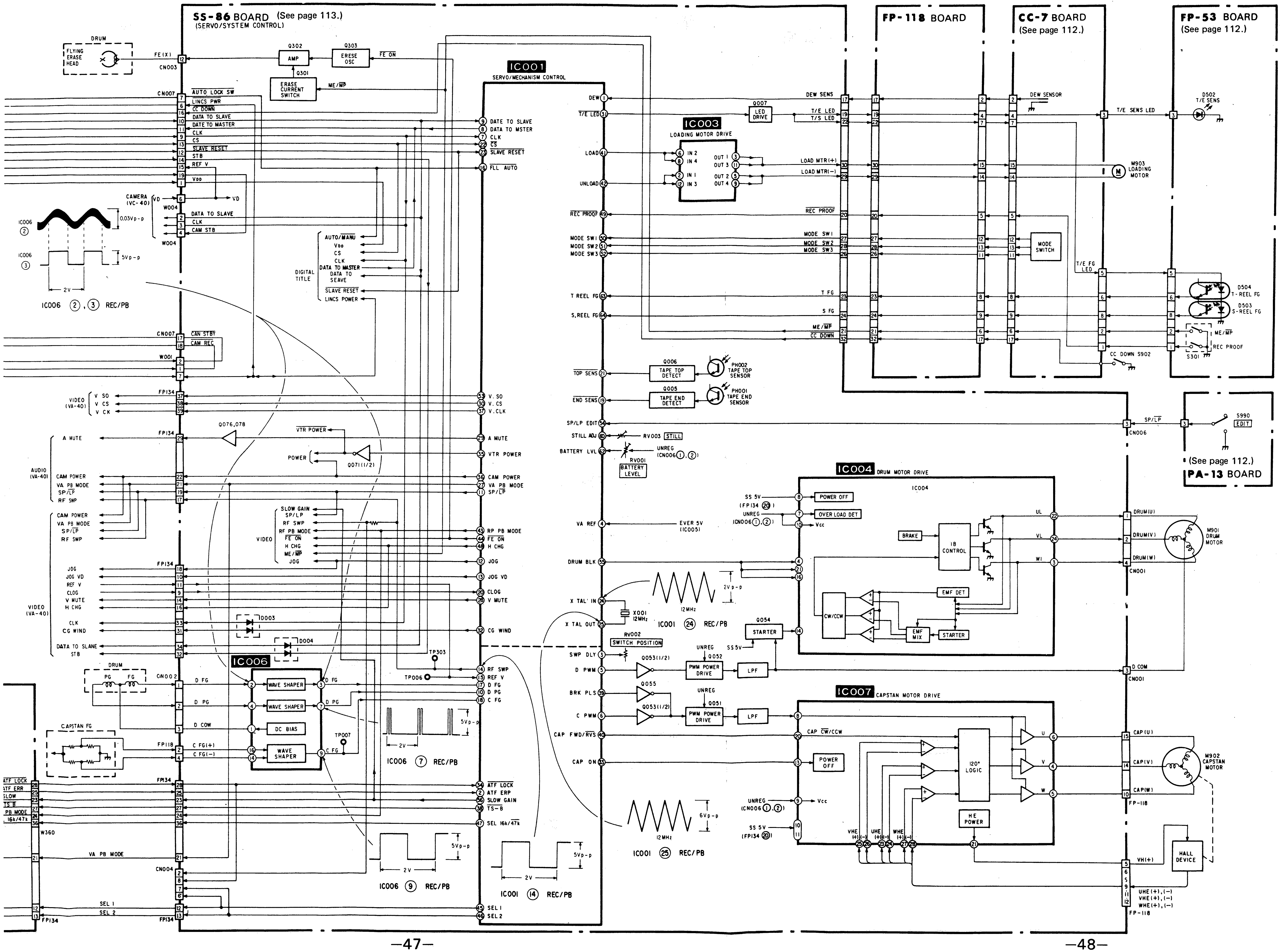
- Components on the rear side indicated by "- - -" line.


TL-19 (LED)
VF-13 (VIEWFINDER)
TL-18 (LED)
ZM-8 (ZOOM SWITCH)
VC-38 (AUTO WHITE BALANCE, CCD IMAGER)
FV-1 (VTR FUNCTION SWITCH, POWER SWITCH)
EJ-4 (EJECT SWITCH)
FD-6 (FUNCTION SWITCH, CAMERA DATA)
PA-13 (POWER)
SW-92 (START/STOP, STAND BY SWITCHES, IN/OUT JACK)
MC-24 (START/STOP SWITCH, MIC AMP)
FC-16 (MODE CONTROL)


VA-40 (VIDEO/AUDIO SIGNAL PROCESS)
PR-20 (HIC)
MX-7 (HIC)
VC-40 (CAMERA MATRIX/ENCODER, TITLE MIX)
SS-86 (SERVO, SYSTEM CONTROL, DIGITAL TITLER, REC/PB AMP)
DT-71 (HIC)
VC-39 (TIMING/SYNC GENERATOR, AGC/IRIS CONTROL, SIGNAL SEPARATION)
AF (AUTO FOCUS CONTROL, ZOOM MOTOR DRIVE)


EJ-4 BOARD
(See page 127.)
S169 EJECT
W162
DRUM
VIDEO HEAD
CH I
CH 2
CH I'


FC-16 BOARD
(SYSTEM CONTROL)
(See page 127.)
IC190 MODE CONTROL
CAM STB
LINCS PWR
CC DOWN
DATA TO SLVE
DATA TO MSTR
CLK
CS
SLVE RESET
CG STB
REF V
S190 FULL AUTO
OFF
ON
W190
CAM STB
VDD
FD-6 BOARD
(See page 127.)
KEY MATRIX
S153 COUNTER RESET
S150 ZERO MEMORY
S154 EDIT CUE
S151 EDIT REV
S155 TIME
S152 DATE
K OUT 0
K OUT 2
K OUT 3
K IN 4
K IN 3
CN150
FP124
S196 BACK LIGHT
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K IN 3
K IN 4
LI BATT
CN191
W990
LI 3V
LITHIUM BATTERY
PA-13 BOARD
(See page 112.)
IC191
EVER 5V (W190 ⑧)
VOLTAGE DETECT
S197 SHUTTER
S195 AUTO FOCUS
CAM STBY
CAM REC
Q192 LITHIUM BATTERY DETECT
FV-1 BOARD (See page 127.)
KEY MATRIX
SERVICE MODE
S167 REC
S164 PLAY
S168 REW
S165 FF
S162 FRAME
S161 SLOW
S166 STOP
S163 PAUSE
CN160
K OUT 3
K OUT 2
K OUT 1
K OUT 0
KIN 0
KIN 1
KIN 2
KIN 3
W161
K IN 0
K OUT 0
S160 POWER
CAMERA
OFF
VTR
K IN 2
K IN 1
K IN 0
VTR MODE
CAM MODE
Q160,161,163,167,168 INITIAL RESET
RESET
Q164,165
VDD
VLC 1
VLC 2
VLC 3
Q190 DISPLAY SWITCH
EVER 5V (W190 ⑧)
Q166 EVER 5V DETECT
CL 2
CL 1
Q191 SYSTEM CLOCK FREQUENCY SWITCH
J930 REMOTE
LINCS DC
CN9
S930 STANDBY
LOCK
S931 START/STOP
(See page 116.)
SW-92 BOARD
LIQUID CRYSTAL DISPLAY
CN192
S1
S15
COM0
COM3
X2
X1
X190 32.768kHz
CT190 CLOCK
S585 START/STOP
(See page 107.)
MC-24 BOARD
SS-86 BOARD
(See page 107.)
CN003
REC/PB AMP
IC301
FP134
VA-40 BOARD (SERVO)
(See page 108.)
PB RF
Q250 BUFFER
LPF
PR RF (VIDEO, AUDIO)
REC AFT RF
Q251,252 LPF
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
AMP
PEAK DET
SAMPLING HOLD
SCHMITT
IC250 ATF SERVO
PB
OSC
X250 5.9MHz
Q253
Q254


SS-86 BOARD (See page 113.)
(SERVO/SYSTEM CONTROL)
FP-118 BOARD
CC-7 BOARD
(See page 112.)
FP-53 BOARD
(See page 112.)
(See page 112.)
PA-13 BOARD
DRUM
FLYING ERASE HEAD
FE(X)
CN003
Q302
AMP
Q303
ERESE OSC
FE ON
Q301
ERASE CURRENT SWITCH
ME/MP
IC001
SERVO/MECHANISM CONTROL
CN007
AUTO LOCK SW
LINCS PWR
CC DOWN
DATA TO SLAVE
DATE TO MASTER
CLK
CS
SLAVE RESET
STB
REF V
VDD
CAMERA (VC-40)
VD
W004
DATA TO SLAVE
CLK
CAM STB
IC006 ②
0.03Vp-p
IC006 ③
5Vp-p
2V
IC006 ②,③ REC/PB
AUTO/MANU
CS
CLK
DATA TO MASTER
DATA TO SEAVE
SLAVE RESET
LINCS POWER
DIGITAL TITLE
DATE TO SLAVE
DATA TO MSTER
CLK
CS
SLAVE RESET
FLL AUTO
DEW
T/E LED
LOAD
UNLOAD
REC PROOF
MODE SW1
MODE SW2
MODE SW3
T REEL FG
S.REEL FG
TOP SENS
END SENS
SP/LP EDIT
STILL ADJ
BATTERY LVL
VA REF
DRUM BLK
X TAL' IN
X TAL OUT
SWP DLY
D PWM
BRK PLS
C PWM
CAP FWD/RVS
CAP ON
Q007
LED DRIVE
IC003
LOADING MOTOR DRIVE
IN 2
IN 4
IN 1
IN 3
OUT 1
OUT 3
OUT 2
OUT 4
DEW SENS
T/E LED
T/S LED
LOAD MTR(+)
LOAD MTR(-)
REC PROOF
MODE SW1
MODE SW2
MODE SW3
T FG
S FG
ME/MP
CC DOWN
DEW SENSOR
MODE SWITCH
T/E SENS LED
D502
T/E SENS
M903
LOADING MOTOR
T/E FG LED
D504
T-REEL FG
D503
S-REEL FG
ME/MP
REC PROOF
S301
CC DOWN S902
CN007
CAN STBY
CAM REC
W001
Q006
TAPE TOP DETECT
PH002
TAPE TOP SENSOR
Q005
TAPE END DETECT
PH001
TAPE END SENSOR
RV003 STILL
UNREG (CN006①,②)
RV001
BATTERY LEVEL
SP/LP
CN006
S990
EDIT
FP134
VIDEO (VA-40)
V SO
V CS
V CK
V. SO
V. CS
V.CLK
A MUTE
Q076,078
VTR POWER
POWER
Q071(1/2)
A MUTE
VTR POWER
AUDIO (VA-40)
CAM POWER
VA PB MODE
SP/LP
RF SWP
CAM POWER
VA PB MODE
SP/LP
CAM POWER
VA PB MODE
SP/LP
RF SWP
SLOW GAIN
SP/LP
RF SWP
RF PB MODE
FE ON
H CHG
ME/MP
JOG
VIDEO
RP PB MODE
FE ON
H CHG
JOG
JOG
JOG VD
REF V
CLOG
V MUTE
H CHG
CLK
CG WIND
DATA TO SLANE
STB
VIDEO (VA-40)
JOG VD
CLOG
V MUTE
CG WIND
D003
D004
IC004
DRUM MOTOR DRIVE
SS 5V
(FP134 ⑳)
UNREG
(CN006①,②)
POWER OFF
OVER LOAD DET
Vcc
EVER 5V (IC005)
BRAKE
IB CONTROL
EMF DET
CW/CCW
EMF MIX
STARTER
UL
VL
WL
DRUM(U)
DRUM(V)
DRUM(W)
CN001
M901
DRUM MOTOR
2Vp-p
12MHz
X001 12MHz
IC001 ㉔ REC/PB
Q054
STARTER
RV002
SWITCH POSITION
UNREG
SS 5V
Q052
Q053(1/2)
PWM POWER DRIVE
LPF
Q055
Q051
D COM
CN001
IC007
CAPSTAN MOTOR DRIVE
CAP CW/CCW
POWER OFF
120° LOGIC
HE POWER
UNREG
(CN006①,②)
Vcc
SS 5V
(FP134 ⑳)
VHE (+)(-)
UHE (+)(-)
WHE (+)(-)
CAP(U)
CAP(V)
CAP(W)
FP-118
M902
CAPSTAN MOTOR
VH(+)
HALL DEVICE
UHE(+),(-)
VHE(+),(-)
WHE(+),(-)
FP-118
6Vp-p
12MHz
IC001 ㉕ REC/PB
DRUM
PG
FG
CN002
D FG
D PG
D COW
IC006
WAVE SHAPER
WAVE SHAPER
DC BIAS
WAVE SHAPER
D FG
D PG
C FG
TP303
TP006
TP007
RF SWP
REF V
D FG
D PG
C FG
CAPSTAN FG
FP118
C FG(+)
C FG(-)
5Vp-p
2V
IC006 ⑦ REC/PB
ATF LOCK
ATF ERR
SLOW
TS B
PB MODE
16k/47k
FP134
ATF LOCK
ATF ERP
SLOW GAIN
TS-B
SEL 16k/47k
W360
VA PB MODE
CN004
5Vp-p
2V
IC006 ⑨ REC/PB
5Vp-p
2V
IC001 ⑭ REC/PB
SEL 1
SEL 2
SEL1
SEL2
FP134

3-8. MECHANISM CONTROLLER (µPD78112-GF)

This is the 8-bit, single chip microprocessor having the following characteristics.

- µCOM-78K/I
- high speed instruction execution
  Instruction cycle : 333ns/12MHz
- On-chip memory mapping for peripheral hardware (special function register)
- On-chip high function interrupt controller
  Two kinds of processing forms (vector interrupt function/macro service function)
- On-chip high precision A/D converter
  8 bit precision : 8 analog inputs
  One analog input conversion time : 26.7µs/12MHz
- On-chip hardware suitable for servo control of VTR, etc. (servo control unit)
  16 bit free running counter + capture register x 2
  special pulse output control function
  12 bit precision PWM output x 2

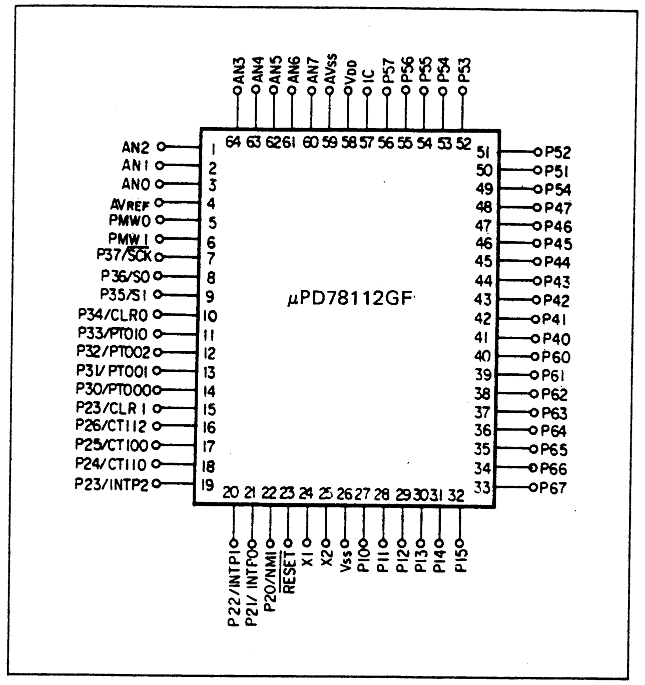

AN3
AN4
AN5
AN6
AN7
AVss
VDD
IC
P57
P56
P55
P54
P53
64 63 62 61 60 59 58 57 56 55 54 53 52
AN2
AN1
AN0
AVREF
PMW0
PMW1
P37/SCK
P36/SO
P35/SI
P34/CLR0
P33/PTO10
P32/PTO02
P31/PTO01
P30/PTO00
P23/CLR1
P26/CT112
P25/CT100
P24/CT110
P23/INTP2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
µPD78112GF
51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33
P52
P51
P54
P47
P46
P45
P44
P43
P42
P41
P40
P60
P61
P62
P63
P64
P65
P66
P67
20 21 22 23 24 25 26 27 28 29 30 31 32
P22/INTP1
P21/INTP0
P20/NMI
RESET
X1
X2
Vss
P10
P11
P12
P13
P14
P15

Fig. 1. µPD78112 pin assignment diagram

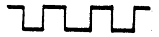
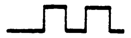
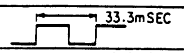
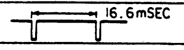
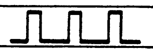
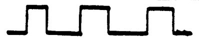
PIN NO	Signal name	I/O	Signal status	Function
1	DEW	I	Analog input	DEW detecting pin. When DEW (condensation) occurs, more than 430mV generates.
2	ATF ERR	I	Analog input	ATF ERROR input pin.
3	SWP DLY	I	Analog input	RF SWP adjustment input pin.
4	VA REF	O		A/D converter reference voltage input pin.
5	D PWM	O	PWM output	Drum motor drive signal
6	C PWM	O	PWM output	Capstan motor drive signal
7	CLK	I		Serial communication clock input.
8	DATA TO MSTR	O		Data output pin for the data to be sent to mode control CPU.
9	DATA TO SLVE	I		Data input pin for the data coming from the mode control CPU.
10	D PG	I		Drum PG input pin.
11	SP/$\overline{\text{LP}}$	O	Logic status	Playback mode output pin. SP="H", LP="L"
12	$\overline{\text{JOG}}$	O	Logic status	Video circuit normal/variable speed playback select signal. "H" during STILL, SLOW, FRAM, CUE/REV, FRSEARCH, REC REV, EDIT CUE, EDIT REV.
13	JOG VD	O	Logic status	False VD output inserted into video signal during variable speed playback mode.
14	RF SWP	O	 33.3mSEC	RF SWP output pin.
15	REF V	I	 16.6mSEC	REF V input pin.
16	$\overline{\text{FULL AUTO}}$	I	Logic status	"L" during AUTO LOCK
17	D FG	I		Drum FG input.
18	C FG	I		Capstan FG input.
19	$\overline{\text{END SENS}}$	I	Logic status	END-side END sensor input.

Table 1 (1)

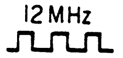
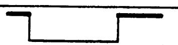
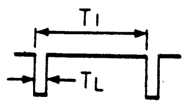
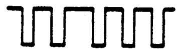
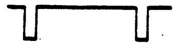
<table>
<tr><th>PIN NO</th><th>Signal name</th><th>I/O</th><th>Signal status</th><th>Functions</th></tr>
<tr><td>20</td><td>CLOG</td><td>I</td><td>Logic status</td><td>Head clogging detect input.</td></tr>
<tr><td>21</td><td>$\overline{\text{TOP SENS}}$</td><td>I</td><td>Logic status</td><td>TOP-side TOP sensor input.</td></tr>
<tr><td>22</td><td>$\overline{\text{CS}}$</td><td>I</td><td>Logic status</td><td>Input signal to start data communication. Starting at fall-down edge.</td></tr>
<tr><td>23</td><td>$\overline{\text{SLVE RESET}}$</td><td>I</td><td>Logic status</td><td>RESET input. "L" RESET.</td></tr>
<tr><td>24</td><td>X'TAL IN</td><td>I</td><td rowspan="2"> 12MHz</td><td>To be used for system clock. X'tal should be connected.</td></tr>
<tr><td>25</td><td>X'TAL OUT</td><td>O</td><td>To be used for system clock. X'tal should be connected.</td></tr>
<tr><td>26</td><td>Vss</td><td></td><td></td><td>GND pin</td></tr>
<tr><td>27</td><td>VA PB MODE</td><td>O</td><td>Logic status</td><td>Video, audio REC/PB select signal. "H" during PB.</td></tr>
<tr><td>28</td><td>V MUTE</td><td>O</td><td>Logic status</td><td>Video, muting signal. "H" during muting.</td></tr>
<tr><td>29</td><td>A MUTE</td><td>O</td><td>Logic status</td><td>Audio, muting signal. "H" during muting.</td></tr>
<tr><td>30</td><td>VIDEO CS</td><td>I</td><td></td><td>Input signal to start video data communication.</td></tr>
<tr><td>31</td><td>$\overline{\text{T/E LED}}$</td><td>O</td><td> T1 TL</td><td>Tape top/end detecting LED ON/OFF.
Reel rotation detecting LED ON/OFF.
<table>
<tr><th>mode</th><th>REC/PB</th><th>CUE/REV</th><th>FF/REW</th></tr>
<tr><td>T1</td><td>100</td><td>14</td><td>2</td></tr>
<tr><td>TL</td><td>1</td><td>1</td><td>1</td></tr>
</table>
(unit in msec)</td></tr>
<tr><td>32</td><td>CG WIND</td><td>O</td><td>"H"=MIX REC
"L"=NOT</td><td>Selection signal whether character generator output will be recorded or will not be recorded.</td></tr>
<tr><td>33</td><td>CAP ON</td><td>O</td><td>Logic status</td><td>Capstan motor ON/OFF signal. "H" level means capstan motor ON.</td></tr>
<tr><td>34</td><td>$\overline{\text{ATF LOCK}}$</td><td>I</td><td>Logic status</td><td>"L" when PB mode ATF phase servo is normally phase-locked.</td></tr>
<tr><td>35</td><td>VTR Power</td><td>O</td><td>Logic status</td><td rowspan="2">DC-DC converter ON/OFF signal.
<table>
<tr><th>mode</th><th>VTR Power</th><th>CAM Power</th></tr>
<tr><td>VTR</td><td>"H"</td><td>"L"</td></tr>
<tr><td>OFF</td><td>"L"</td><td>"L"</td></tr>
<tr><td>CAM</td><td>"H"</td><td>"H"</td></tr>
</table></td></tr>
<tr><td>36</td><td>CAM Power</td><td>O</td><td>Logic status</td></tr>
<tr><td>37</td><td>VIDEO CLK</td><td>I</td><td></td><td>Clock for video serial data communication.</td></tr>
<tr><td>38</td><td>TS B</td><td>O</td><td></td><td>ATF LOCK sampling hold signal. "L" during sampling mode. "H" during hold mode.</td></tr>
<tr><td>39</td><td>CAP BRK</td><td>O</td><td>Logic status</td><td>This is the signal that applies full voltage to capstan motor.</td></tr>
<tr><td>40</td><td>CAP FWD/$\overline{\text{RVS}}$</td><td>O</td><td>Logic status</td><td>Capstan motor rotating direction select signal. "H" during normal direction (FWD) rotation.</td></tr>
<tr><td>41</td><td>LOAD</td><td>O</td><td>Logic status</td><td rowspan="2">Threading motor control signal.
<table>
<tr><th>Operation / Signal name</th><th>LOAD</th><th>UNLOAD</th><th>BRAKE</th></tr>
<tr><td>LOAD</td><td>H</td><td>L</td><td>H</td></tr>
<tr><td>UNLOAD</td><td>L</td><td>H</td><td>H</td></tr>
</table></td></tr>
<tr><td>42</td><td>UNLOAD</td><td>O</td><td>Logic status</td></tr>
<tr><td>43</td><td>RP PB MODE</td><td>O</td><td>Logic status</td><td>REC/PB amplifier REC/PB select signal. "H" during PB.</td></tr>
<tr><td>44</td><td>$\overline{\text{FE ON}}$</td><td>O</td><td>Logic status</td><td>Flying erase oscillation ON/OFF signal, "L" during oscillation.</td></tr>
</table>

Table 1 (2)

PIN

—oP52
—oP51
—oP54
—oP47
—oP46
—oP45
—oP44
—oP43
—oP42
—oP41
—oP40
—oP60
—oP61
—oP62
—oP63
—oP64
—oP65
—oP66
—oP67

;nment

curs,

pin.

.P="L"

de.

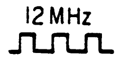
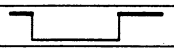
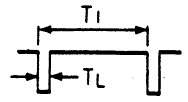
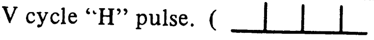
<table>
<tr><th>PIN NO</th><th>Signal name</th><th>I／O</th><th>Signal status</th><th>Functions</th></tr>
<tr><td>20</td><td>CLOG</td><td>I</td><td>Logic status</td><td>Head clogging detect input.</td></tr>
<tr><td>21</td><td>$\overline{\text{TOP SENS}}$</td><td>I</td><td>Logic status</td><td>TOP-side TOP sensor input.</td></tr>
<tr><td>22</td><td>$\overline{\text{CS}}$</td><td>I</td><td>Logic status</td><td>Input signal to start data communication. Starting at fall-down edge.</td></tr>
<tr><td>23</td><td>$\overline{\text{SLVE RESET}}$</td><td>I</td><td>Logic status</td><td>RESET input. "L" RESET.</td></tr>
<tr><td>24</td><td>X'TAL IN</td><td>I</td><td rowspan="2">
</td><td>To be used for system clock. X'tal should be connected.</td></tr>
<tr><td>25</td><td>X'TAL OUT</td><td>O</td><td>To be used for system clock. X'tal should be connected.</td></tr>
<tr><td>26</td><td>V_{SS}</td><td></td><td></td><td>GND pin</td></tr>
<tr><td>27</td><td>VA PB MODE</td><td>O</td><td>Logic status</td><td>Video, audio REC/PB select signal. "H" during PB.</td></tr>
<tr><td>28</td><td>V MUTE</td><td>O</td><td>Logic status</td><td>Video, muting signal. "H" during muting.</td></tr>
<tr><td>29</td><td>A MUTE</td><td>O</td><td>Logic status</td><td>Audio, muting signal. "H" during muting.</td></tr>
<tr><td>30</td><td>VIDEO CS</td><td>I</td><td></td><td>Input signal to start video data communication.</td></tr>
<tr><td>31</td><td>$\overline{\text{T／E LED}}$</td><td>O</td><td>
</td><td>Tape top/end detecting LED ON/OFF.
Reel rotation detecting LED ON/OFF.
<table>
<tr><th>mode</th><th>REC／PB</th><th>CUE／REV</th><th>FF／REW</th></tr>
<tr><td>T_I</td><td>100</td><td>14</td><td>2</td></tr>
<tr><td>T_L</td><td>1</td><td>1</td><td>1</td></tr>
</table>
(unit in msec)</td></tr>
<tr><td>32</td><td>CG WIND</td><td>O</td><td>"H"=MIX REC
"L"=NOT</td><td>Selection signal whether character generator output will be recorded or will not be recorded.</td></tr>
<tr><td>33</td><td>CAP ON</td><td>O</td><td>Logic status</td><td>Capstan motor ON/OFF signal. "H" level means capstan motor ON.</td></tr>
<tr><td>34</td><td>$\overline{\text{ATF LOCK}}$</td><td>I</td><td>Logic status</td><td>"L" when PB mode ATF phase servo is normally phase-locked.</td></tr>
<tr><td>35</td><td>VTR Power</td><td>O</td><td>Logic status</td><td rowspan="2">DC-DC converter ON/OFF signal.
<table>
<tr><th>mode</th><th>VTR Power</th><th>CAM Power</th></tr>
<tr><td>VTR</td><td>"H"</td><td>"L"</td></tr>
<tr><td>OFF</td><td>"L"</td><td>"L"</td></tr>
<tr><td>CAM</td><td>"H"</td><td>"H"</td></tr>
</table></td></tr>
<tr><td>36</td><td>CAM Power</td><td>O</td><td>Logic status</td></tr>
<tr><td>37</td><td>VIDEO CLK</td><td>I</td><td> </td><td>Clock for video serial data communication.</td></tr>
<tr><td>38</td><td>TS B</td><td>O</td><td> </td><td>ATF LOCK sampling hold signal. "L" during sampling mode. "H" during hold mode.</td></tr>
<tr><td>39</td><td>CAP BRK</td><td>O</td><td>Logic status</td><td>This is the signal that applies full voltage to capstan motor.</td></tr>
<tr><td>40</td><td>CAP FWD／$\overline{\text{RVS}}$</td><td>O</td><td>Logic status</td><td>Capstan motor rotating direction select signal. "H" during normal direction (FWD) rotation.</td></tr>
<tr><td>41</td><td>LOAD</td><td>O</td><td>Logic status</td><td rowspan="2">Threading motor control signal.
<table>
<tr><th>Operation
Signal name</th><th>LOAD</th><th>UNLOAD</th><th>BRAKE</th></tr>
<tr><td>LOAD</td><td>H</td><td>L</td><td>H</td></tr>
<tr><td>UNLOAD</td><td>L</td><td>H</td><td>H</td></tr>
</table></td></tr>
<tr><td>42</td><td>UNLOAD</td><td>O</td><td>Logic status</td></tr>
<tr><td>43</td><td>RP PB MODE</td><td>O</td><td>Logic status</td><td>REC/PB amplifier REC/PB select signal. "H" during PB.</td></tr>
<tr><td>44</td><td>$\overline{\text{FE ON}}$</td><td>O</td><td>Logic status</td><td>Flying erase oscillation ON/OFF signal, "L" during oscillation.</td></tr>
</table>

Table 1 (2)

<table>
<tr><th>PIN NO</th><th>Signal name</th><th>I／O</th><th>Signal status</th><th>Functions</th></tr>
<tr><td>45</td><td>SEL1</td><td>O</td><td>Logic status</td><td rowspan="2">ATF REF PILOT signal frequency control.
<table>
<tr><th>ATF REF PILOT</th><th>f_1</th><th>f_2</th><th>f_3</th><th>f_4</th></tr>
<tr><td>SEL1</td><td>H</td><td>L</td><td>H</td><td>L</td></tr>
<tr><td>SEL2</td><td>H</td><td>H</td><td>L</td><td>L</td></tr>
</table></td></tr>
<tr><td>46</td><td>SEL2</td><td>O</td><td>Logic status</td></tr>
<tr><td>47</td><td>SEL 16K／$\overline{\text{47K}}$</td><td>O</td><td>Logic status</td><td>ATF BPF select signal. "L" when detecting ATF error in f1 and f3 tracks.
"H" when detecting ATF error in f2 and f4 tracks.</td></tr>
<tr><td>48</td><td>HCHG</td><td>O</td><td>Logic status</td><td>Head select signal. "H"=CH-1' "L"=CH-1.</td></tr>
<tr><td>49</td><td>$\overline{\text{REC PROOF SW}}$</td><td>I</td><td>Logic status</td><td>"H" when cassette's erroneous erasure preventing switch is set in the erasure prevention side.</td></tr>
<tr><td>50</td><td>MSW1</td><td>I</td><td>Logic status</td><td rowspan="3">Mechanism mode switch input (three bit structure, mechanical position detection)</td></tr>
<tr><td>51</td><td>MSW2</td><td>I</td><td>Logic status</td></tr>
<tr><td>52</td><td>MSW3</td><td>I</td><td>Logic status</td></tr>
<tr><td>53</td><td>VIDEO SO</td><td>O</td><td>Logic status</td><td>Data line for the data to be sent to CXA1201.</td></tr>
<tr><td>54</td><td>$\overline{\text{EDIT}}$</td><td>I</td><td></td><td>Input signal for EDIT selection. "H": OFF. "L": ON</td></tr>
<tr><td>55</td><td>DRUM BRK</td><td>O</td><td>Logic status</td><td>Slow mode drum fH compensation drum brake signal.</td></tr>
<tr><td>56</td><td>SLOW GAIN</td><td>O</td><td>Logic status</td><td>ATF ERROR's gain select signal.</td></tr>
<tr><td>57</td><td>VPP</td><td></td><td></td><td>Fixed to power supply voltage.</td></tr>
<tr><td>58</td><td>V_{DD}</td><td></td><td></td><td>Power supply pin.</td></tr>
<tr><td>59</td><td>AV_{SS}</td><td></td><td></td><td>A/D converter's GND pin.</td></tr>
<tr><td>60</td><td>STILL ADJ</td><td>I</td><td></td><td>Input signal for STILL noise position adjustment.</td></tr>
<tr><td>61</td><td>JAP／$\overline{\text{USA}}$</td><td>I</td><td>Analog input</td><td>Destination select SW input. More than 2.5V JAPAN. Less than 2.5V USA.</td></tr>
<tr><td>62</td><td>BATT LVL</td><td>I</td><td>Analog input</td><td>BATTERY LEVEL input. This is input at approx.1/2.</td></tr>
<tr><td>63</td><td>T REEL FG</td><td>I</td><td>Analog input</td><td>Take-up side REEL FG input. Used to detect reel rotation.</td></tr>
<tr><td>64</td><td>S REEL FG</td><td>I</td><td>Analog input</td><td>Supply side REEL FG input. Used to detect reel rotation.</td></tr>
</table>

Table 1 (3)

3-9. SYSTEM CONTROL – CAMERA BLOCK INTERFACE

Signal	I/O	Pin No.	Input/Output Level
AF ON	O	SS-86 board IC200 ⑤	"H" when auto focus in ON.
TELE IN	I	SS-86 board IC200 ③	"L" when zoom switch TELE is pressed.
WIDE IN	I	SS-86 board IC200 ④	"L" when zoom switch WIDE is pressed.
TALLY	O	SS-86 board IC200 ⑭	"L" when in CAMERA mode and REC mode.
CAM STB	O	FC-18 board IC190 ③	4V cycle "H" pulse. () Strobe signal for serial data transmission.
CLK	O	FC-18 board IC190 ⑦	2V cycle "L" Pulse series. ( ) Serial data transmission clock.
DATA TO SLAVE	O	FC-18 board IC190 ⑥	2V cycle pulse series. ( ) Serial data transmission.
TELE OUT	O	SS-86 board IC200 ⑦	"H" during the zoom motor is rotating TELE direction.
WIDE OUT	O	SS-86 board IC200 ⑧	"H" during the zoom motor is rotating WIDE direction.
BACK LIGHT	O	SS-86 board IC200 ⑥	"H" during Back Light is lit.

3-10. SYSTEM CONTROL – VIDEO, AUDIO BLOCK INTERFACE

Signal	I/O	Pin No.	VTR mode													CAMERA mode			
			STOP	FF	REW	FF SEARCH		PB	PICTUER SEARCH		PB•PAUSE	FRAME	SLOW	REC	REC. PAUSE	STAND-BY	EDIT CUE	EDIT REVIEW	REC
						CUE	REVIEW		CUE	REVIEW									
SP/LP	O	SS-86 board IC001 ⑪	H	H	H	* 1	* 1	* 2	* 1	* 1	* 1	* 1	* 1	H	H	H	H	H	H
JOG	O	SS-86 board IC001 ⑫	H	H	H	L	L	H	L	L	L	L	L	H	H	H	L	L	H
JOG VD	O	SS-86 board IC001 ⑬	L	L	L	* 3	* 3	L	* 3	* 3	* 3	* 3	* 3	L	L	L	* 3	* 3	L
VA SWP	O	SS-86 board IC001 ⑭	H/L	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4
REF V	O	SS-86 board IC001 ⑮	*. 5	* 5	* 5	L	L	L	L	L	L	L	L	* 5	* 5	* 5	L	L	* 5
CLOG	I	SS-86 board IC001 ⑳	H	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	H			* 6	* 6	H
VA PB MODE	O	SS-86 board IC001 ㉗	L	L	L	H	H	H	H	H	H	H	H	L	L	L	H	H	L
V MUTE	O	SS-86 board IC001 ㉘	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
A MUTE	O	SS-86 board IC001 ㉙	L	L	L	H	H	L	H	H	H	H	H	L	L	L	H	H	L
CG WIND	O	SS-86 board IC001 ㉜	H	H	H	H	H	H	H	H	H	H	H	H	H	* 7	* 7	* 7	* 7
CAM PWR	O	SS-86 board IC001 ㊱	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H
RP PB MODE	O	SS-86 board IC001 ㊸	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	L
FE ON	O	SS-86 board IC001 ㊹	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	L
TAPE2/TAPE1	O	FP-53board S301	"L" when using MP type tape.																
EDIT	O	PA-13 board S990	"L" when EDIT switch (PA-13 board S990) is turuned ON.																
DATA TO SLAVE	O	FC-16 board IC190 ⑥	V cycle "L" pulse series (VTR mode)													"L" pulse series (CAMERA mode)			
CLK	O	FC-16 board IC190 ⑦	V cycle "L" pulse series (VTR mode)													"L" pulse series (CAMERA mode)			
CG STB	O	FC-16 board IC190 ②	L	L	L	L	L	L	L	L	L	L	L	L	L	* 8	* 8	* 8	* 8

* 1 Outputs identification results is PB mode immediately preceding. SP mode "H" , LP mode "L" .
* 2 Outputs identification results of playback tape recording mode (SP/LP). SP mode "H" , LP mode "L" .
* 3 False VD signal (V cylce "H" pulse)
* 4 30Hz 50% duty pulse. Synchronized to drum rotation.
* 5 V cycle "L" pulse separated from line input video signal or camera video signal.
* 6 "H" at tape no signal portion or dropout portion. Input for head clogging detection.
* 7 V cycle pulse
* 8 2V cycle pulse series.

3-11. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE

Signal	I/O	Pin No.	VTR MODE						
			STOP	FF	REW	FR SEARCH		PB	PIC
						CUE	REVIEW		CUI
ATF ERR	I	SS-86 board IC001 ②		* 1	* 1	* 2	* 2	* 2	* 2
SWP DLY * 3	I	SS-86 board IC001 ③							
D PWM	O	SS-86 board IC001 ⑤	L	* 4	* 4	* 4	* 4	* 4	* 4
C PWM	O	SS-86 board IC001 ⑥	L	* 5	* 5	* 5	* 5	* 5	* 5
D PG	I	SS-86 board IC001 ⑩	L	* 6	* 6	* 6	* 6	* 6	* 6
RF SWP	O	SS-86 board IC001 ⑭	H/L	* 7	* 7	* 7	* 7	* 7	* 7
REF V	I	SS-86 board IC001 ⑮	* 8	* 8	* 8	L	L	L	L
D FG	I	SS-86 board IC001 ⑰	H	* 9	* 9	* 9	* 9	* 9	* 9
C FG	I	SS-86 board IC001 ⑱	H/L	* 10	* 10	* 11	* 12	* 13	* 1
CAP ON	O	SS-86 board IC001 ㉝	L	H	H	H	H	H	H
ATF LOCK	I	SS-86 board IC001 ㉞		H	H	H	H	L	H
TS B	O	SS-86 board IC001 ㊳	H	H	H	H	H	* 15	H
CAP BRK	O	SS-86 board IC001 ㊴	L	L	L	L	L	L	L
CAP FWD/RVS	O	SS-86 board IC001 ㊵	H	H	L	H	L	H	H
SEL1	O	SS-86 board IC001 ㊺	L	L	L	* 18	* 19	* 15	* 1
SEL2	O	SS-86 board IC001 ㊻	L	L	L	* 18	* 19	* 15	* 1
SEL 16K/47K	O	SS-86 board IC001 ㊼	L	L	L	* 18	* 19	* 15	* 1
SLOW GAIN	O	SS-86 board IC001 (56)	L	L	L	L	L	L	L

3-11. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE

Signal	I/O	Pin No.	VTR MODE													CAMERA MODE			
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB•PAUSE	FRAME	SLOW	REC	REC. PAUSE	STAND-BY	EDIT CUE	EDIT REV	REC
						CUE	REVIEW		CUE	REVIEW									
ATF ERR	I	SS-86 board IC001 ②		∗ 1	∗ 1	∗ 2	∗ 2	∗ 2	∗ 2	∗ 2	∗ 2	∗ 2	∗ 2	∗ 1			∗ 2	∗ 2	∗ 1
SWP DLY ∗ 3	I	SS-86 board IC001 ③																	
D PWM	O	SS-86 board IC001 ⑤	L	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4
C PWM	O	SS-86 board IC001 ⑥	L	∗ 5	∗ 5	∗ 5	∗ 5	∗ 5	∗ 5	∗ 5	L	∗ 5	∗ 5	∗ 5	L	L	∗ 5	∗ 5	∗ 5
D PG	I	SS-86 board IC001 ⑩	L	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6
RF SWP	O	SS-86 board IC001 ⑭	H/L	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7	∗ 7
REF V	I	SS-86 board IC001 ⑮	∗ 8	∗ 8	∗ 8	L	L	L	L	L	L	L	L	∗ 8	∗ 8	∗ 8	L	L	∗ 8
D FG	I	SS-86 board IC001 ⑰	H	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9	∗ 9
C FG	I	SS-86 board IC001 ⑱	H/L	∗ 10	∗ 10	∗ 11	∗ 12	∗ 13	∗ 11	∗ 12	H/L	∗ 14	∗ 14	∗ 13	H/L	H/L	∗ 13	∗ 13	∗ 13
CAP ON	O	SS-86 board IC001 ㉝	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
$\overline{\text{ATF LOCK}}$	I	SS-86 board IC001 ㉞		H	H	H	H	L	H	H	H	H	H	H	H	H	L	L	H
$\overline{\text{TS B}}$	O	SS-86 board IC001 ㊳	H	H	H	H	H	∗ 15	H	H	H	H	H	H	H	H	∗ 15	∗ 16	H
CAP BRK	O	SS-86 board IC001 ㊴	L	L	L	L	L	L	L	L	L	∗ 17	∗ 17	L	L	L	L	L	L
CAP FWD/$\overline{\text{RVS}}$	O	SS-86 board IC001 ㊵	H	H	L	H	L	H	H	L	H	H	H	H	H	H	H	L	H
SEL1	O	SS-86 board IC001 ㊺	L	L	L	∗ 18	∗ 19	∗ 15	∗ 18	∗ 19	H	∗ 20	∗ 20	∗ 21	L	L	∗ 15	∗ 16	∗ 21
SEL2	O	SS-86 board IC001 ㊻	L	L	L	∗ 18	∗ 19	∗ 15	∗ 18	∗ 19	H/L	∗ 20	∗ 20	∗ 21	H	H	∗ 15	∗ 16	∗ 21
SEL 16K/$\overline{\text{47K}}$	O	SS-86 board IC001 ㊼	L	L	L	∗ 18	∗ 19	∗ 15	∗ 18	∗ 19	L	∗ 20	∗ 20	L	L	L	∗ 15	∗ 16	L
SLOW GAIN	O	SS-86 board IC001 (56)	L	L	L	L	L	L	L	L	H	H	H	L	L	L	L	L	L

VTR mode									CAMERA mode			
CH	PB	PICTUER SEARCH		PB•PAUSE	FRAME	SLOW	REC	REC. PAUSE	STAND-BY	EDIT CUE	EDIT REVIEW	REC
REVIEW		CUE	REVIEW									
∗ 1	∗ 2	∗ 1	∗ 1	∗ 1	∗ 1	∗ 1	H	H	H	H	H	H
L	H	L	L	L	L	L	H	H	H	L	L	H
∗ 3	L	∗ 3	∗ 3	∗ 3	∗ 3	∗ 3	L	L	L	∗ 3	∗ 3	L
∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4	∗ 4
L	L	L	L	L	L	L	∗ 5	∗ 5	∗ 5	L	L	∗ 5
∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	∗ 6	H			∗ 6	∗ 6	H
H	H	H	H	H	H	H	L	L	L	H	H	L
L	L	L	L	L	L	L	L	L	L	L	L	L
H	L	H	H	H	H	H	L	L	L	H	H	L
H	H	H	H	H	H	H	H	H	∗ 7	∗ 7	∗ 7	∗ 7
L	L	L	L	L	L	L	L	L	H	H	H	H
H	H	H	H	H	H	H	L	H	H	H	H	L
H	H	H	H	H	H	H	L	H	H	H	H	L
turuned ON.												
									"L" pulse series (CAMERA mode)			
									"L" pulse series (CAMERA mode)			
L	L	L	L	L	L	L	L	L	∗ 8	∗ 8	∗ 8	∗ 8

∗ 7 V cycle pulse

∗ 8 2V cycle pulse series.

∗ 1 Fixed voltage approx. 2V DC.

∗ 2 ATF error voltage

∗ 3 DC voltage set by RV002 is input.

∗ 4 53μsec cycle PWM wave. Duty ratio changes according to drum error signal.

∗ 5 53μsec cycle PWM wave. Duty ratio changes according to capstan error signal.

∗ 6 V cycle "H" pulse ( )

∗ 7 30Hz 50% duty pulse ( ). Synchronized to drum rotation.

∗ 8 V cycle "L" pulse separated from line input video signal or camera video signal.

∗ 9 720Hz pulse

∗ 10 Approx. 16500Hz pulse

∗ 11 Approx. 5900Hz pulse (SP mode)

∗ 12 Approx. 5600Hz pulse (SP mode)

∗ 13 Approx. 826Hz pulse (SP mode)

∗ 14 Pulse input during step-by-step

∗ 15 Refer to Timing Chart 1

∗ 16 Refer to Timing Chart 2

∗ 17 "H" pulse output during step-by-step

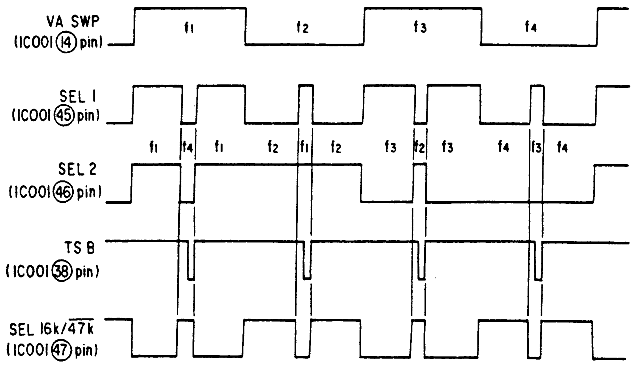
∗ 18 Refer to Timing Chart 3

∗ 19 Refer to Timing Chart 4

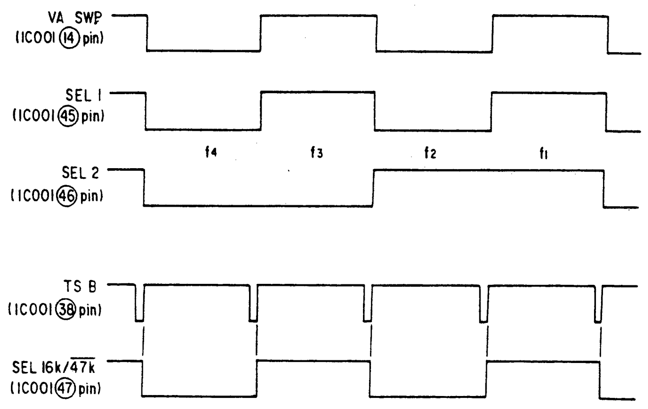
∗ 20 Pulse output during step-by-step

∗ 21 Refer to Timing Chart 5

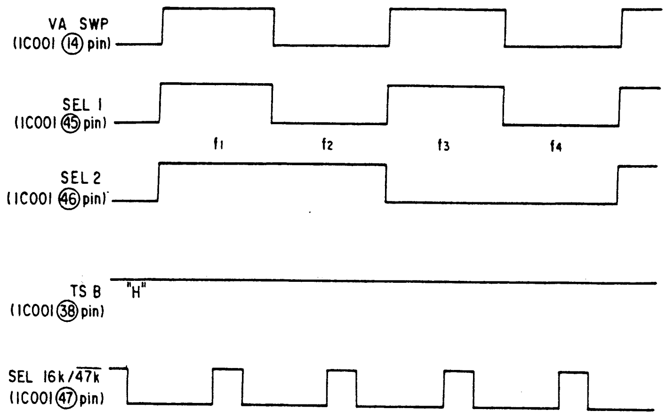
3-11-1. TIMING CHART 1 (PB, EDIT CUE)


VA SWP (IC001⑭pin)
f1
f2
f3
f4
SEL 1 (IC001㊺pin)
f1 f4 f1 f2 f1 f2 f3 f2 f3 f4 f3 f4
SEL 2 (IC001㊻pin)
TS B (IC001㊳pin)
SEL 16k/47k (IC001㊼pin)

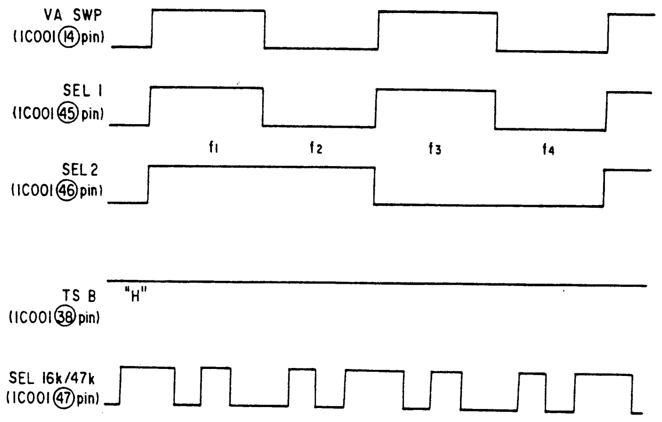
3-11-2. TIMING CHART 2 (EDIT REVIEW)


VA SWP (IC001⑭pin)
SEL 1 (IC001㊺pin)
f4
f3
f2
f1
SEL 2 (IC001㊻pin)
TS B (IC001㊳pin)
SEL 16k/47k (IC001㊼pin)

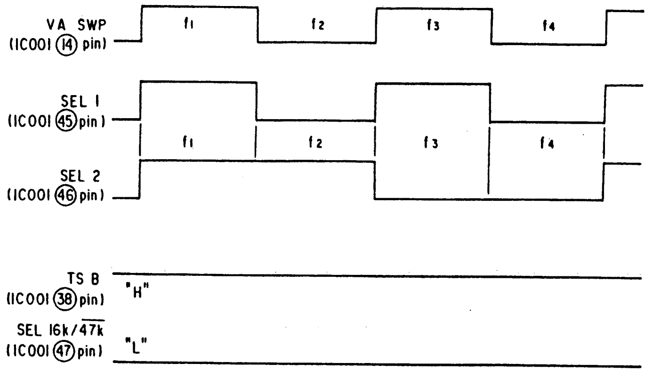
3-11-3. TIMING CHART 3 (CUE)


VA SWP (IC001 ⑭ pin)
SEL 1 (IC001 ㊺pin)
f1
f2
f3
f4
SEL 2 (IC001 ㊻pin)
TS B (IC001㊳pin)
"H"
SEL 16k/47k (IC001㊼pin)

3-11-4. TIMING CHART 4 (REVIEW)


VA SWP (IC001⑭pin)
SEL 1 (IC001㊺pin)
f1
f2
f3
f4
SEL 2 (IC001㊻pin)
TS B (IC001㊳pin)
"H"
SEL 16k/47k (IC001㊼pin)

3-11-5. TIMING CHART 5 (REC)

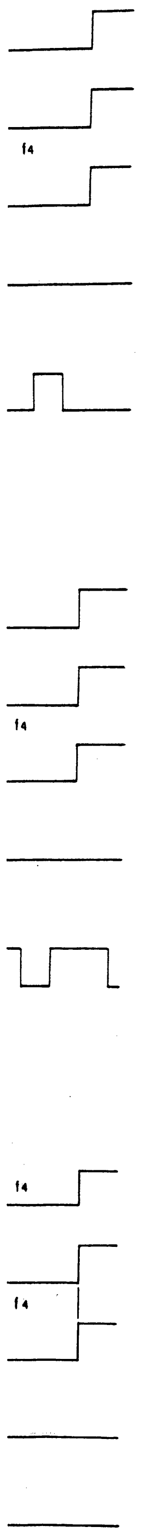

VA SWP (IC001 ⑭ pin)
f1
f2
f3
f4
SEL 1 (IC001㊺pin)
f1
f2
f3
f4
SEL 2 (IC001㊻pin)
TS B (IC001㊳pin)
"H"
SEL 16k/47k (IC001㊼pin)
"L"

3-12. SYSTEM CONTROL – PERIPHERAL CIRCUIT INTERFACE

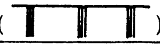
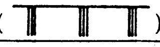
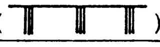
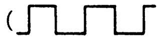
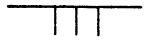
Signal	I/O	Pin No.	Input/Output Level
DEW	I	SS-86 board IC001①	Dew sensor input. Input voltage increases when there is dew.
VA REF	I	SS-86 board IC001④	Reference voltage input (5V DC) for A-D conversion of pin (1) (DEW), pin (2) (ATF ERR) and pin (3) (SWP DLY) input analog voltage (0-5V DC).
CLK	I	SS-86 board IC001⑦	Clock input from serial data transmission mode control(FC-18boardIC190) V cycle "L" pulse (╥ ╥ ╥) in VTR mode.
DATA TO MASTER	O	SS-86 board IC001⑧	Serial data output to mode control. V cycle "L" pulse (╥ ╥ ╥) in VTR mode.
DATA TO SLAVE	I	SS-86 board IC001⑨	Serial data input from mode control. V cycle "L" pulse (╥ ╥ ╥) in VTR mode.
$\overline{\text{END SENS}}$	I	SS-86 board IC001⑲	TAPE END sensor (SS-86 board PH001) input. "L" pulse input at tape end. Normally "H" .
$\overline{\text{TOP SENS}}$	I	SS-86 board IC001㉑	TAPE TOP sensor (SS-86 board PH002) input. "L" pulse input at tape top. Normally "H" .
$\overline{\text{CS}}$	I	SS-86 board IC001㉒	Serial signal chip select signal input from mode control. V cycle pulse (⎍⎍⎍).
$\overline{\text{SLAVE RESET}}$	I	SS-86 board IC001㉓	Reset signal input from mode control. Goes "L" when power is turned ON/OFF and servo/mechanism control (SS-86 board IC001) is reset.
$\overline{\text{E/T LED}}$	O	SS-86 board IC001㉛	Pulse output (╥╥╥) for lighting up T/E SENS LED (FP-53 board D302). REC/PB 100msec cycle. CUE/REVIEW 17msec cycle. FF/REW 3msec cycle. "L" when LED is lit up.
VTR POWER	O	SS-86 board IC001㉟	VTR power ON/OFF signal output. "H" during VTR mode and CAMERA mode. Operates DC-DC converter, and generates VTR 5V.
CAM POWER	O	SS-86 board IC001㊱	Camera power ON/OFF signal output. "H" during CAMERA mode. Operates DC-DC converter and generates voltages used for camera.
LOAD	O	SS-86 board IC001㊶	"H" during cassette loading.
UNLOAD	O	SS-86 board IC001㊷	"H" during cassette eject.
$\overline{\text{REC PROOF}}$	I	SS-86 board IC001㊾	"H" when cassette which can not be recorded (erase prevention) is inserted.
M SW1	I	SS-86 board IC001㊿	Mode switch input for mechanism. Indicates mechanism position.
M SW2	I	SS-86 board IC001(51)	
M SW3	I	SS-86 board IC001(52)	

Mechanism position	READY	REC/PB/ CUE/REV/FF/REW	GL	STOP	EJECT	Mid-position
M SW1	L	H	H	H	L	H
M SW2	H	H	L	L	L	H
M SW3	H	L	L	H	H	H

Signal	I/O	Pin No.	Input/Output Level
V SO	O	SS-86 board IC001(53)	Video serial data output.
BATTERY LEVEL	I	SS-86 board IC001(62)	Main battery voltage level detection input.
T REEL FG	I	SS-86 board IC001(63)	T REEL FG (FP-53 board D304) input. Pulse corresponds to S reel rotation.
S REEL FG	I	SS-86 board IC001(64)	S REEL FG (FP-53 board D303) input. Pulse corresponds to S reel rotation.



3-12. SYSTEM CONTROL – PERIPHERAL CIRCUIT INTERFACE

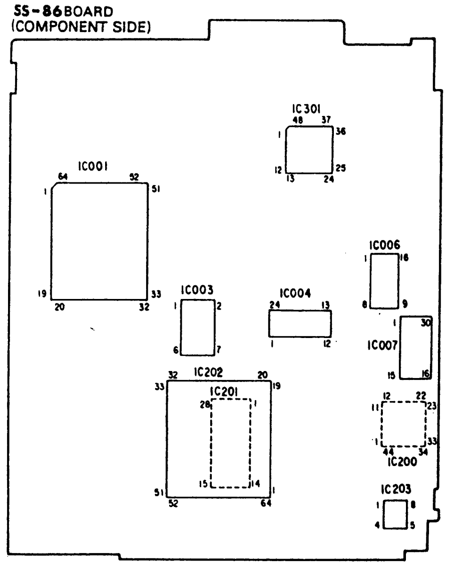
Signal	I/O	Pin No.	Input/Output Level
DEW	I	SS-86 board IC001①	Dew sensor input. Input voltage increases when there is dew.
VA REF	I	SS-86 board IC001④	Reference voltage input (5V DC) for A-D conversion of pin (1) (DEW), pin (2) (ATF ERR) and pin (3) (SWP DLY) input analog voltage (0-5V DC).
CLK	I	SS-86 board IC001⑦	Clock input from serial data transmission mode control(FC-18boardIC190). V cycle "L" pulse () in VTR mode.
DATA TO MASTER	O	SS-86 board IC001⑧	Serial data output to mode control. V cycle "L" pulse () in VTR mode.
DATA TO SLAVE	I	SS-86 board IC001⑨	Serial data input from mode control. V cycle "L" pulse () in VTR mode.
$\overline{\text{END SENS}}$	I	SS-86 board IC001⑲	TAPE END sensor (SS-86 board PH001) input. "L" pulse input at tape end. Normally "H" .
$\overline{\text{TOP SENS}}$	I	SS-86 board IC001㉑	TAPE TOP sensor (SS-86 board PH002) input. "L" pulse input at tape top. Normally "H" .
$\overline{\text{CS}}$	I	SS-86 board IC001㉒	Serial signal chip select signal input from mode control. V cycle pulse ().
$\overline{\text{SLAVE RESET}}$	I	SS-86 board IC001㉓	Reset signal input from mode control. Goes "L" when power is turned ON/OFF and servo/mechanism control (SS-86 board IC001) is reset.
$\overline{\text{E/T LED}}$	O	SS-86 board IC001㉛	Pulse output () for lighting up T/E SENS LED (FP-53 board D302). REC/PB 100msec cycle. CUE/REVIEW 17msec cycle. FF/REW 3msec cycle. "L" when LED is lit up.
VTR POWER	O	SS-86 board IC001㉟	VTR power ON/OFF signal output. "H" during VTR mode and CAMERA mode. Operates DC-DC converter, and generates VTR 5V.
CAM POWER	O	SS-86 board IC001㊱	Camera power ON/OFF signal output. "H" during CAMERA mode. Operates DC-DC converter and generates voltages used for camera.
LOAD	O	SS-86 board IC001㊶	"H" during cassette loading.
UNLOAD	O	SS-86 board IC001㊷	"H" during cassette eject.
$\overline{\text{REC PROOF}}$	I	SS-86 board IC001㊾	"H" when cassette which can not be recorded (erase prevention) is inserted.
M SW1	I	SS-86 board IC001㊿	Mode switch input for mechanism. Indicates mechanism position.
M SW2	I	SS-86 board IC001(51)	
M SW3	I	SS-86 board IC001(52)	

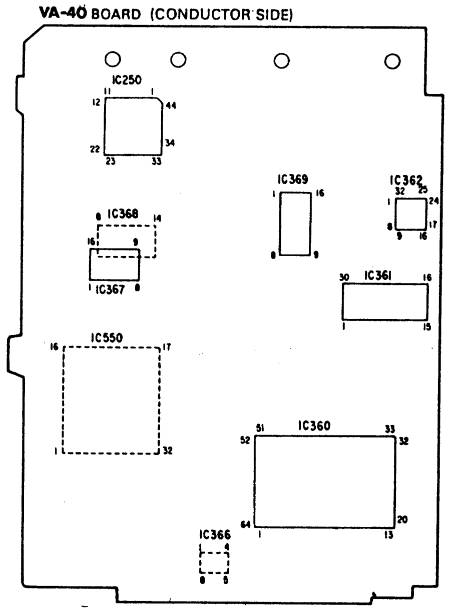
Mechanism position	READY	REC/PB/ CUE/REV/FF/REW	GL	STOP	EJECT	Mid-position
M SW1	L	H	H	H	L	H
M SW2	H	H	L	L	L	H
M SW3	H	L	L	H	H	H

Signal	I/O	Pin No.	Input/Output Level
V SO	O	SS-86 board IC001(53)	Video serial data output.
BATTERY LEVEL	I	SS-86 board IC001(62)	Main battery voltage level detection input.
T REEL FG	I	SS-86 board IC001(63)	T REEL FG (FP-53 board D304) input. Pulse corresponds to S reel rotation.
S REEL FG	I	SS-86 board IC001(64)	S REEL FG (FP-53 board D303) input. Pulse corresponds to S reel rotation.

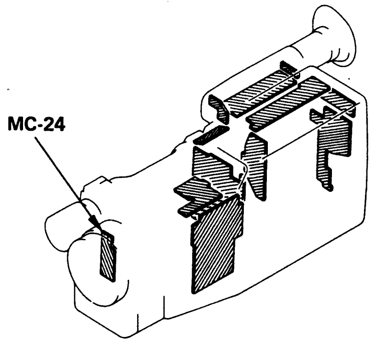
3-13. AUDIO BLOCK DIAGRAM

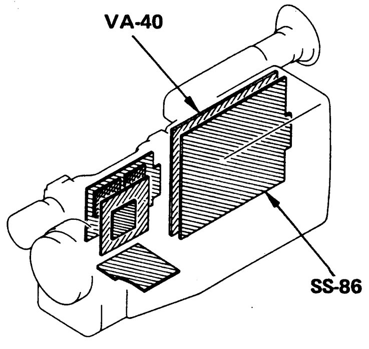
- ( ) near the board name indicates the schematic diagram page.

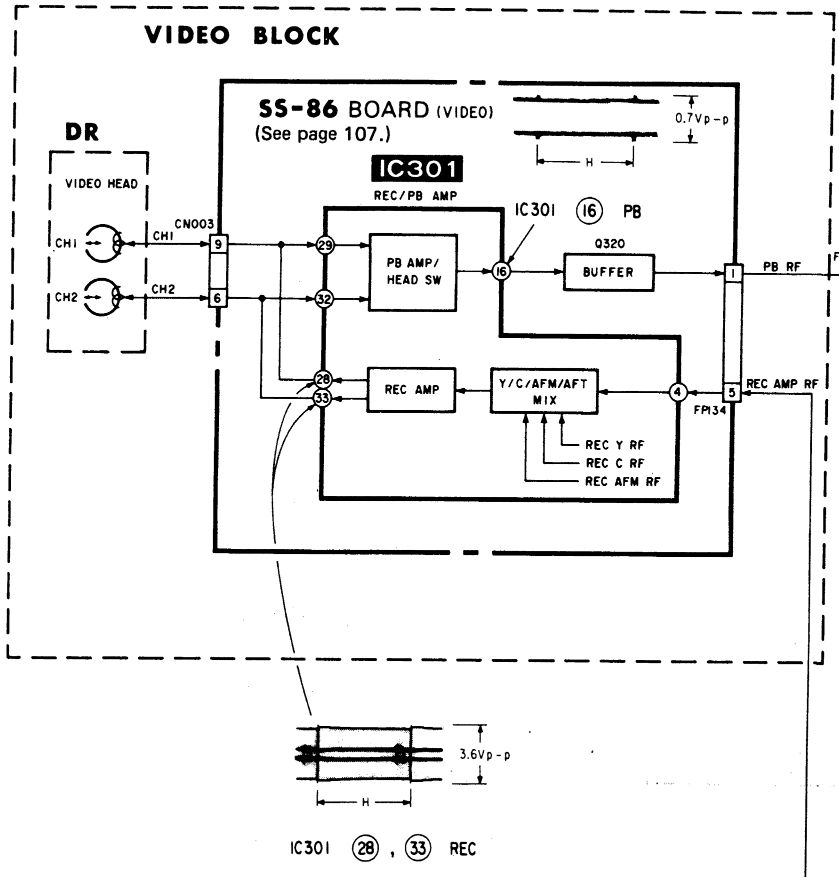
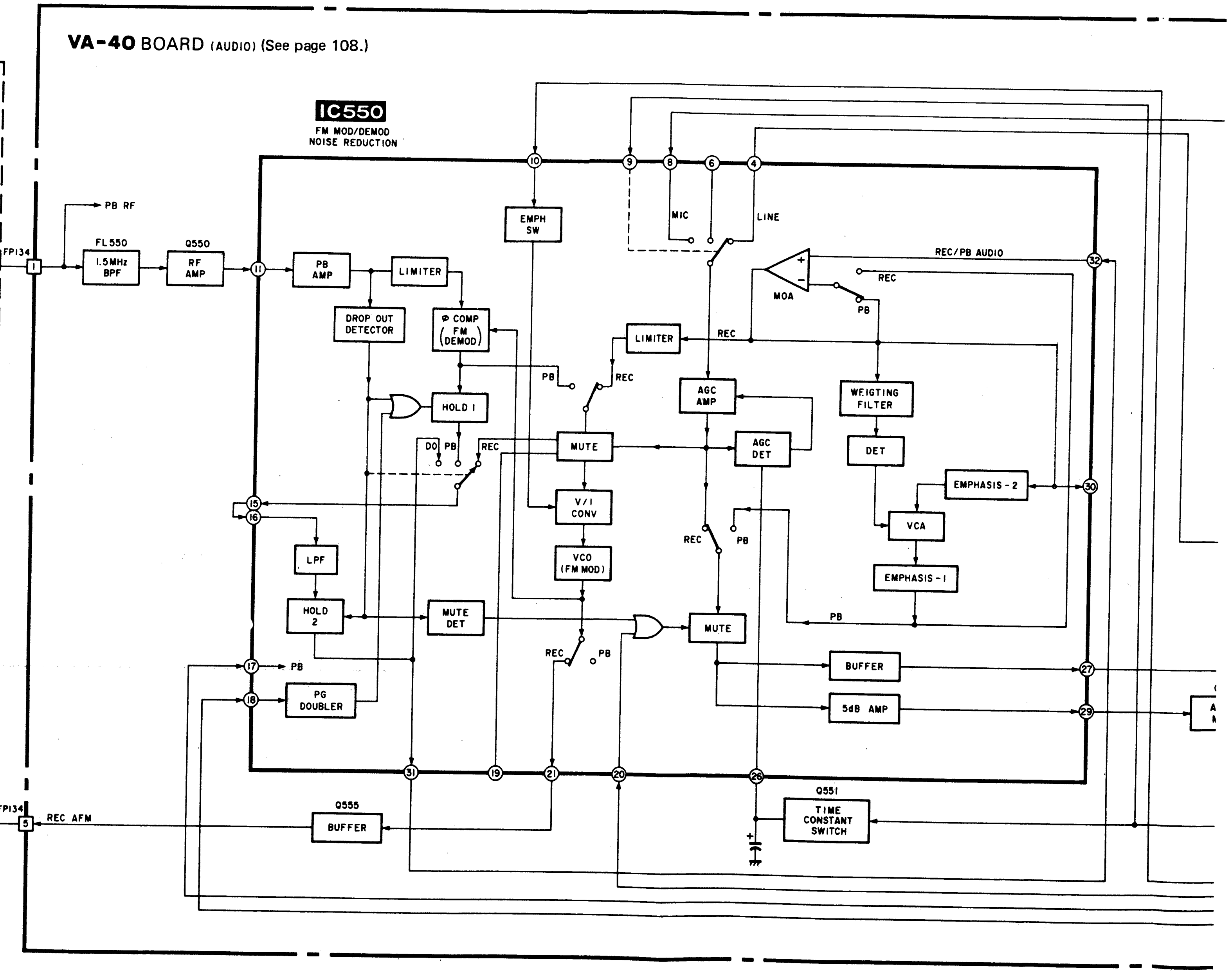

SS-86 BOARD
(COMPONENT SIDE)
IC301
IC001
IC003
IC004
IC006
IC007
IC202
IC201
IC200
IC203

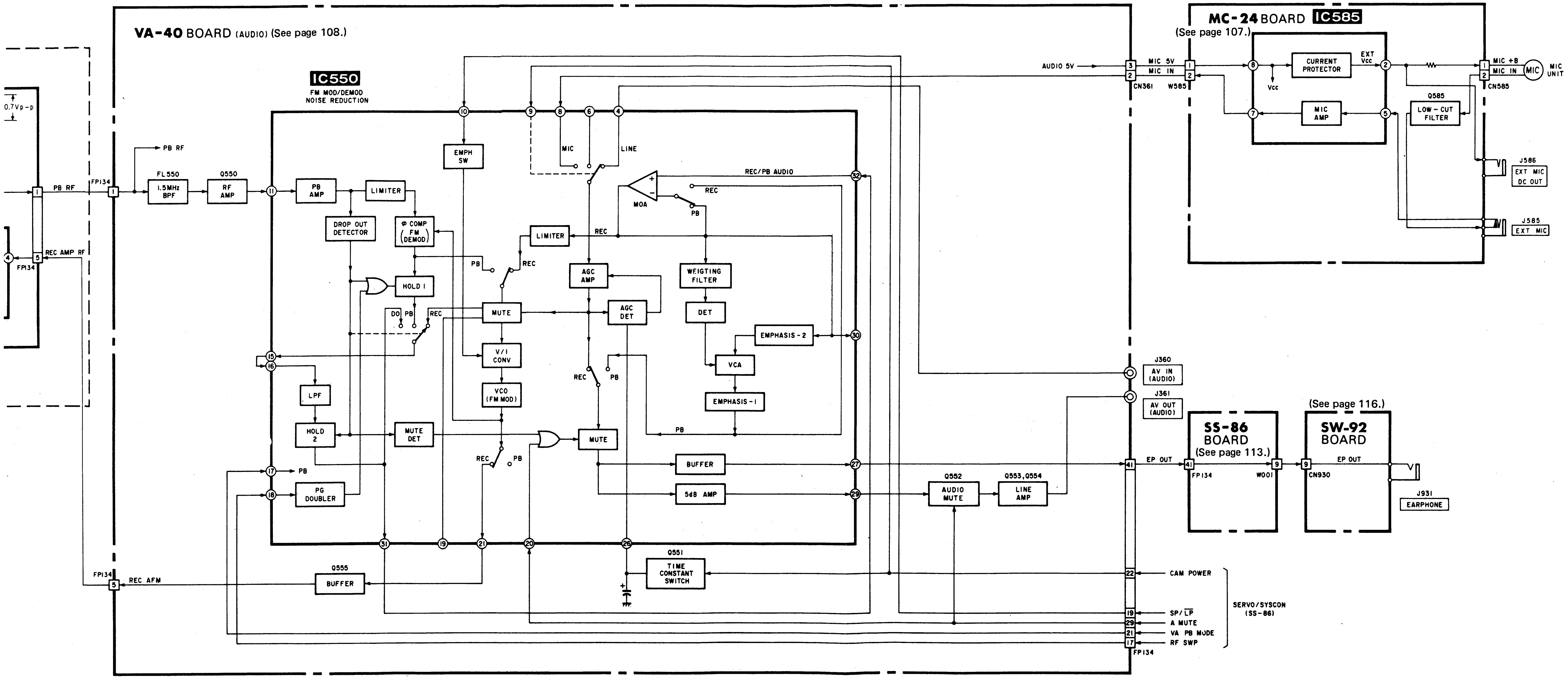

VA-40 BOARD (CONDUCTOR SIDE)
IC250
IC369
IC362
IC368
IC367
IC361
IC550
IC360
IC366

- Components on the rear side indicated by "- - -" line.



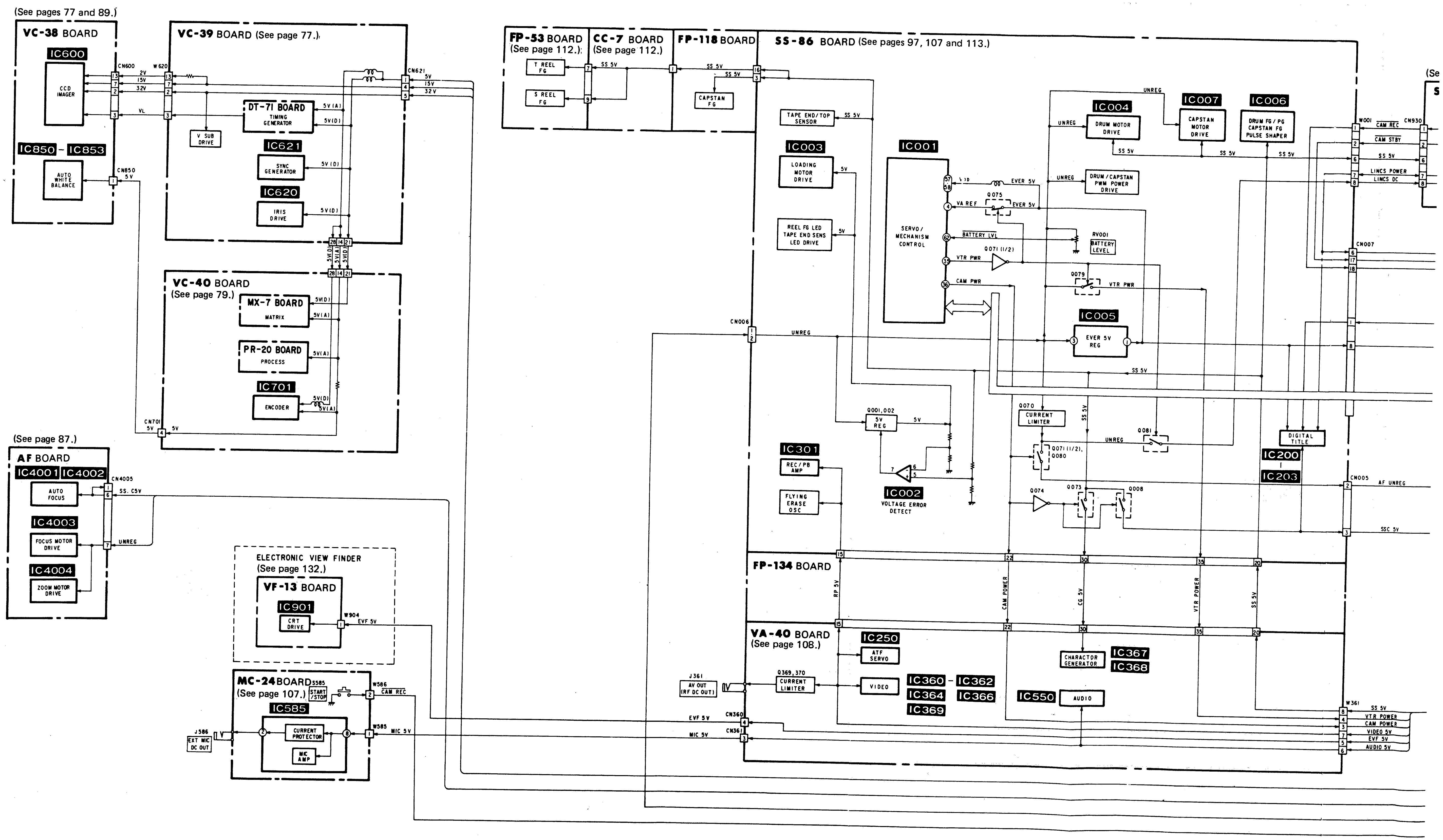




VIDEO BLOCK
DR
VIDEO HEAD
CH1
CH2
CN003
SS-86 BOARD (VIDEO)
(See page 107.)
IC301
REC/PB AMP
0.7Vp-p
H
IC301 ⑯ PB
PB AMP/
HEAD SW
Q320
BUFFER
REC AMP
Y/C/AFM/AFT
MIX
REC Y RF
REC C RF
REC AFM RF
PB RF
REC AMP RF
FP134
3.6Vp-p
IC301 ㉘ , ㉝ REC
VA-40 BOARD (AUDIO) (See page 108.)
IC550
FM MOD/DEMOD
NOISE REDUCTION
PB RF
FL550
1.5MHz
BPF
Q550
RF
AMP
PB
AMP
LIMITER
DROP OUT
DETECTOR
φ COMP
(FM DEMOD)
HOLD 1
DO
PB
REC
EMPH
SW
MIC
LINE
MOA
REC/PB AUDIO
REC
PB
LIMITER
AGC
AMP
AGC
DET
MUTE
V/I
CONV
VCO
(FM MOD)
WEIGTING
FILTER
DET
EMPHASIS-2
VCA
EMPHASIS-1
LPF
HOLD
2
MUTE
DET
MUTE
PG
DOUBLER
BUFFER
5dB AMP
Q555
BUFFER
REC AFM
Q551
TIME
CONSTANT
SWITCH

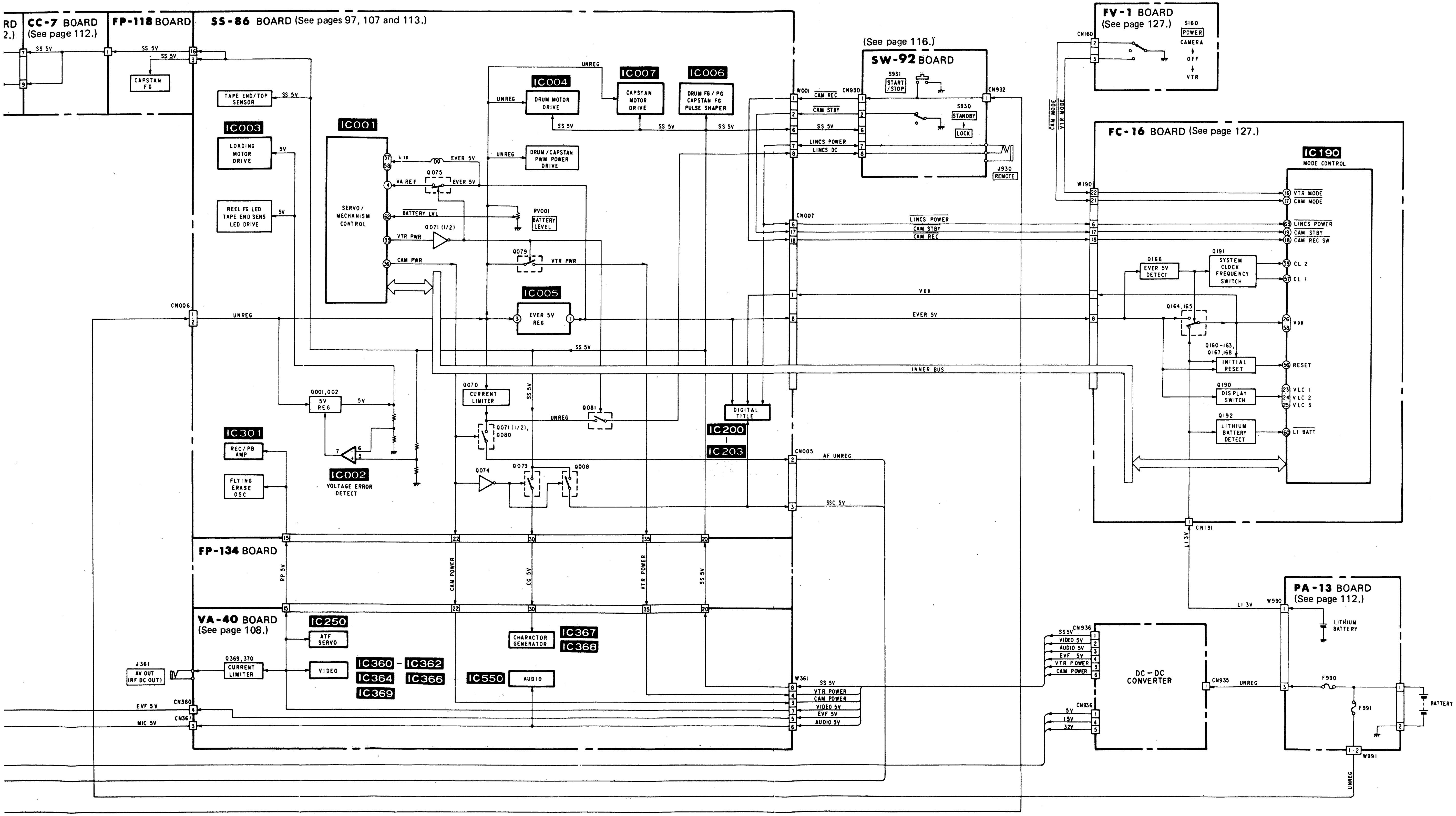

VA-40 BOARD (AUDIO) (See page 108.)
IC550
FM MOD/DEMOD NOISE REDUCTION
0.7Vp-p
PB RF
FP134
REC AMP RF
FL550
1.5MHz BPF
Q550
RF AMP
PB AMP
LIMITER
DROP OUT DETECTOR
φ COMP (FM DEMOD)
HOLD 1
DO
PB
REC
MUTE
V/I CONV
VCO (FM MOD)
EMPH SW
MIC
LINE
MOA
REC/PB AUDIO
AGC AMP
AGC DET
WEIGTING FILTER
DET
VCA
EMPHASIS-2
EMPHASIS-1
LPF
HOLD 2
MUTE DET
PG DOUBLER
BUFFER
5dB AMP
Q551
TIME CONSTANT SWITCH
Q555
BUFFER
REC AFM
AUDIO 5V
MIC 5V
MIC IN
CN361
W585
Q552
AUDIO MUTE
Q553,Q554
LINE AMP
EP OUT
CAM POWER
SP/LP
A MUTE
VA PB MODE
RF SWP
SERVO/SYSCON (SS-86)
J360
AV IN (AUDIO)
J361
AV OUT (AUDIO)
MC-24 BOARD IC585
(See page 107.)
CURRENT PROTECTOR
EXT Vcc
Vcc
MIC AMP
Q585
LOW-CUT FILTER
MIC +B
MIC IN
CN585
MIC
MIC UNIT
J586
EXT MIC DC OUT
J585
EXT MIC
SS-86 BOARD
(See page 113.)
FP134
W001
(See page 116.)
SW-92 BOARD
CN930
J931
EARPHONE

3-14. POWER SUPPLY BLOCK DIAGRAM

- ( ) near the board name indicates the schematic diagram page.


(See pages 77 and 89.)
VC-38 BOARD
IC600
CCD IMAGER
IC850 - IC853
AUTO WHITE BALANCE
CN600
CN850
W620
2V
15V
32V
VL
5V
VC-39 BOARD (See page 77.)
V SUB DRIVE
DT-71 BOARD
TIMING GENERATOR
5V(A)
5V(D)
IC621
SYNC GENERATOR
IC620
IRIS DRIVE
CN621
VC-40 BOARD
(See page 79.)
MX-7 BOARD
MATRIX
PR-20 BOARD
PROCESS
IC701
ENCODER
CN701
(See page 87.)
AF BOARD
IC4001
IC4002
AUTO FOCUS
IC4003
FOCUS MOTOR DRIVE
IC4004
ZOOM MOTOR DRIVE
CN4005
SS. C5V
UNREG
ELECTRONIC VIEW FINDER
(See page 132.)
VF-13 BOARD
IC901
CRT DRIVE
W904
EVF 5V
MC-24 BOARD
(See page 107.)
S585
START/STOP
IC585
CURRENT PROTECTOR
MIC AMP
W586
CAM REC
W585
MIC 5V
J586
EXT MIC DC OUT
FP-53 BOARD
(See page 112.)
T REEL FG
S REEL FG
CC-7 BOARD
(See page 112.)
SS 5V
FP-118 BOARD
CAPSTAN FG
SS-86 BOARD (See pages 97, 107 and 113.)
TAPE END/TOP SENSOR
IC003
LOADING MOTOR DRIVE
REEL FG LED TAPE END SENS LED DRIVE
IC001
SERVO/MECHANISM CONTROL
VA REF
BATTERY LVL
VTR PWR
CAM PWR
EVER 5V
Q075
Q071 (1/2)
Q079
RV001
BATTERY LEVEL
IC004
DRUM MOTOR DRIVE
DRUM/CAPSTAN PWM POWER DRIVE
IC007
CAPSTAN MOTOR DRIVE
IC006
DRUM FG/PG CAPSTAN FG PULSE SHAPER
IC005
EVER 5V REG
W001
CN930
CAM REC
CAM STBY
LINCS POWER
LINCS DC
CN007
CN006
Q001,002
5V REG
IC002
VOLTAGE ERROR DETECT
IC301
REC/PB AMP
FLYING ERASE OSC
Q070
CURRENT LIMITER
Q071 (1/2), Q080
Q081
Q074
Q073
Q008
DIGITAL TITLE
IC200
IC203
CN005
AF UNREG
SSC 5V
FP-134 BOARD
RP 5V
CAM POWER
CG 5V
VTR POWER
SS 5V
VA-40 BOARD
(See page 108.)
IC250
ATF SERVO
Q369,370
CURRENT LIMITER
VIDEO
IC360 - IC362
IC364
IC366
IC369
IC550
AUDIO
CHARACTOR GENERATOR
IC367
IC368
J361
AV OUT (RF DC OUT)
CN360
CN361
EVF 5V
MIC 5V
W361
SS 5V
VTR POWER
CAM POWER
VIDEO 5V
EVF 5V
AUDIO 5V
(Se
S

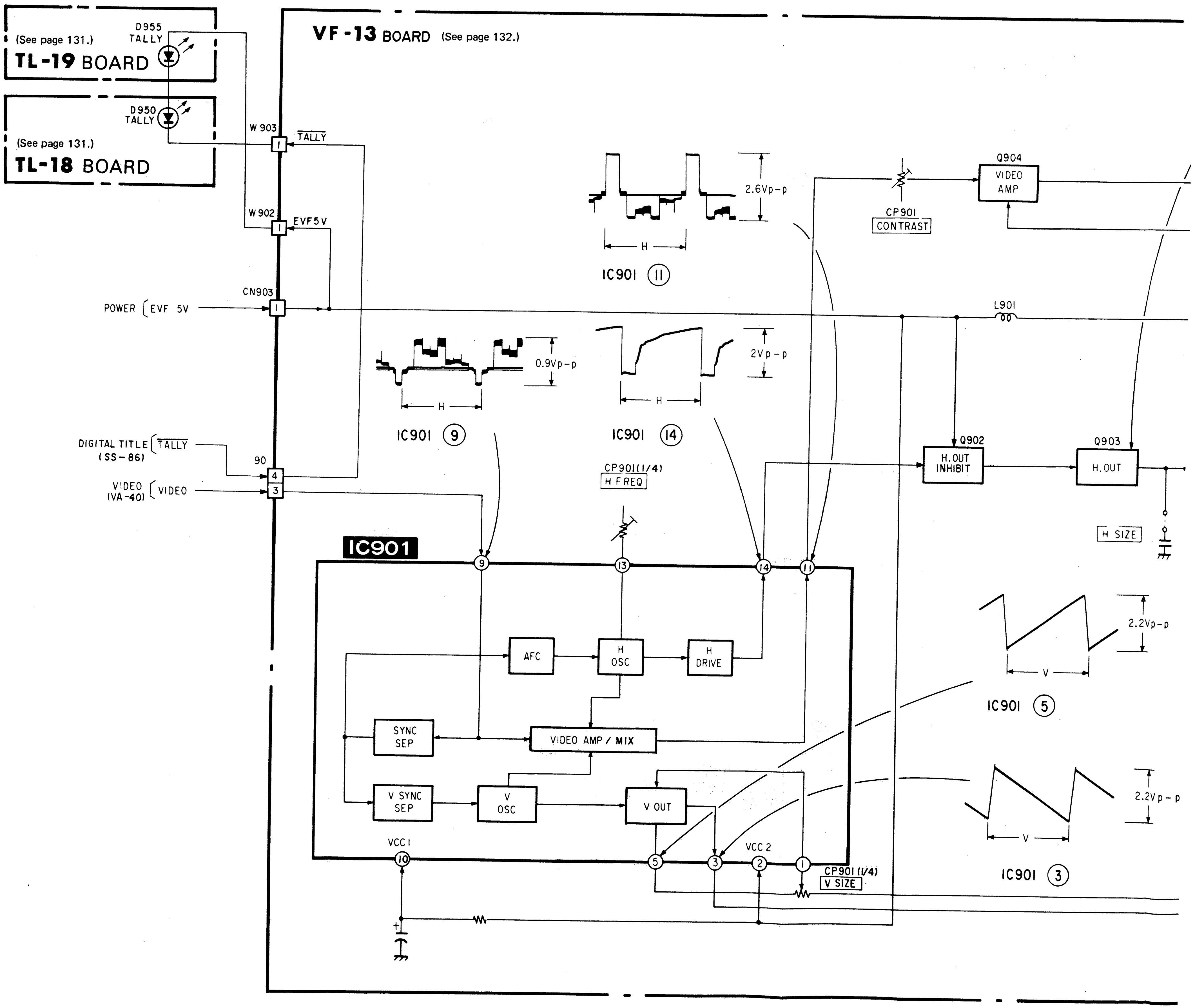
page.



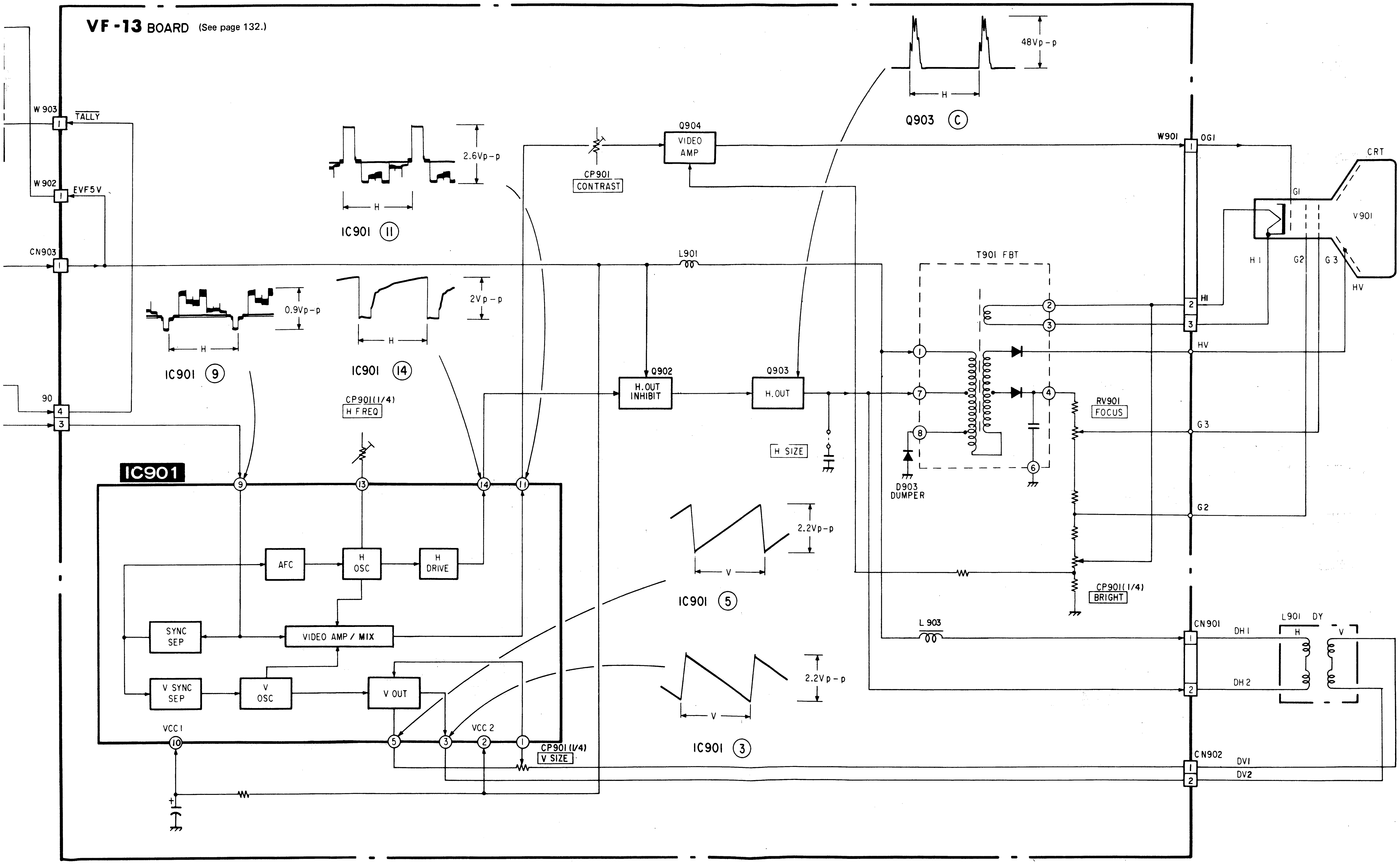
CC-7 BOARD (See page 112.)
FP-118 BOARD
SS-86 BOARD (See pages 97, 107 and 113.)
SS 5V
CAPSTAN FG
TAPE END/TOP SENSOR
IC003
LOADING MOTOR DRIVE
REEL FG LED TAPE END SENS LED DRIVE
IC001
SERVO/ MECHANISM CONTROL
VA REF
BATTERY LVL
VTR PWR
CAM PWR
Q075
Q071 (1/2)
Q079
EVER 5V
RV001 BATTERY LEVEL
UNREG
IC004
DRUM MOTOR DRIVE
DRUM/CAPSTAN PWM POWER DRIVE
IC007
CAPSTAN MOTOR DRIVE
IC006
DRUM FG/PG CAPSTAN FG PULSE SHAPER
IC005
EVER 5V REG
CN006
Q001,002
5V REG
IC002
VOLTAGE ERROR DETECT
IC301
REC/PB AMP
FLYING ERASE OSC
Q070
CURRENT LIMITER
Q071 (1/2), Q080
Q074
Q073
Q008
Q081
DIGITAL TITLE
IC200
IC203
CN005
AF UNREG
SSC 5V
CN007
W001
CAM REC
CAM STBY
LINCS POWER
LINCS DC
(See page 116.)
SW-92 BOARD
S931 START /STOP
S930 STANDBY LOCK
CN930
CN932
J930 REMOTE
FV-1 BOARD (See page 127.)
CN160
S160 POWER CAMERA OFF VTR
CAM MODE
VTR MODE
FC-16 BOARD (See page 127.)
IC190
MODE CONTROL
W190
VTR MODE
CAM MODE
LINCS POWER
CAM STBY
CAM REC SW
Q166 EVER 5V DETECT
Q191 SYSTEM CLOCK FREQUENCY SWITCH
CL 2
CL 1
VDD
Q164,165
Q160–163, Q167,168
INITIAL RESET
RESET
Q190 DISPLAY SWITCH
VLC 1
VLC 2
VLC 3
Q192 LITHIUM BATTERY DETECT
LI BATT
INNER BUS
CN191
LI 3V
FP-134 BOARD
RP 5V
CAM POWER
CG 5V
VTR POWER
VA-40 BOARD (See page 108.)
IC250
ATF SERVO
VIDEO
IC360 – IC362
IC364 IC366
IC369
CHARACTOR GENERATOR
IC367
IC368
IC550
AUDIO
J361 AV OUT (RF DC OUT)
Q369, 370 CURRENT LIMITER
CN360
CN361
EVF 5V
MIC 5V
W361
VIDEO 5V
AUDIO 5V
CN936
SS5V
CN935
DC-DC CONVERTER
5V
15V
32V
PA-13 BOARD (See page 112.)
W990
LITHIUM BATTERY
F990
F991
BATTERY
W991

3-15. VIEWFINDER BLOCK DIAGRAM

- ( ) near the board name indicates the schematic diagram page.


(See page 131.)
D955
TALLY
TL-19 BOARD
D950
TALLY
(See page 131.)
TL-18 BOARD
VF-13 BOARD (See page 132.)
W903
TALLY
W902
EVF5V
CN903
POWER
EVF 5V
DIGITAL TITLE
(SS-86)
TALLY
90
VIDEO
(VA-40)
VIDEO
2.6Vp-p
H
IC901 ⑪
0.9Vp-p
H
IC901 ⑨
2Vp-p
H
IC901 ⑭
CP901(1/4)
H FREQ
CP901
CONTRAST
Q904
VIDEO AMP
L901
Q902
H.OUT INHIBIT
Q903
H.OUT
H SIZE
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP / MIX
V SYNC SEP
V OSC
V OUT
VCC1
VCC2
CP901(1/4)
V SIZE
2.2Vp-p
V
IC901 ⑤
2.2Vp-p
V
IC901 ③

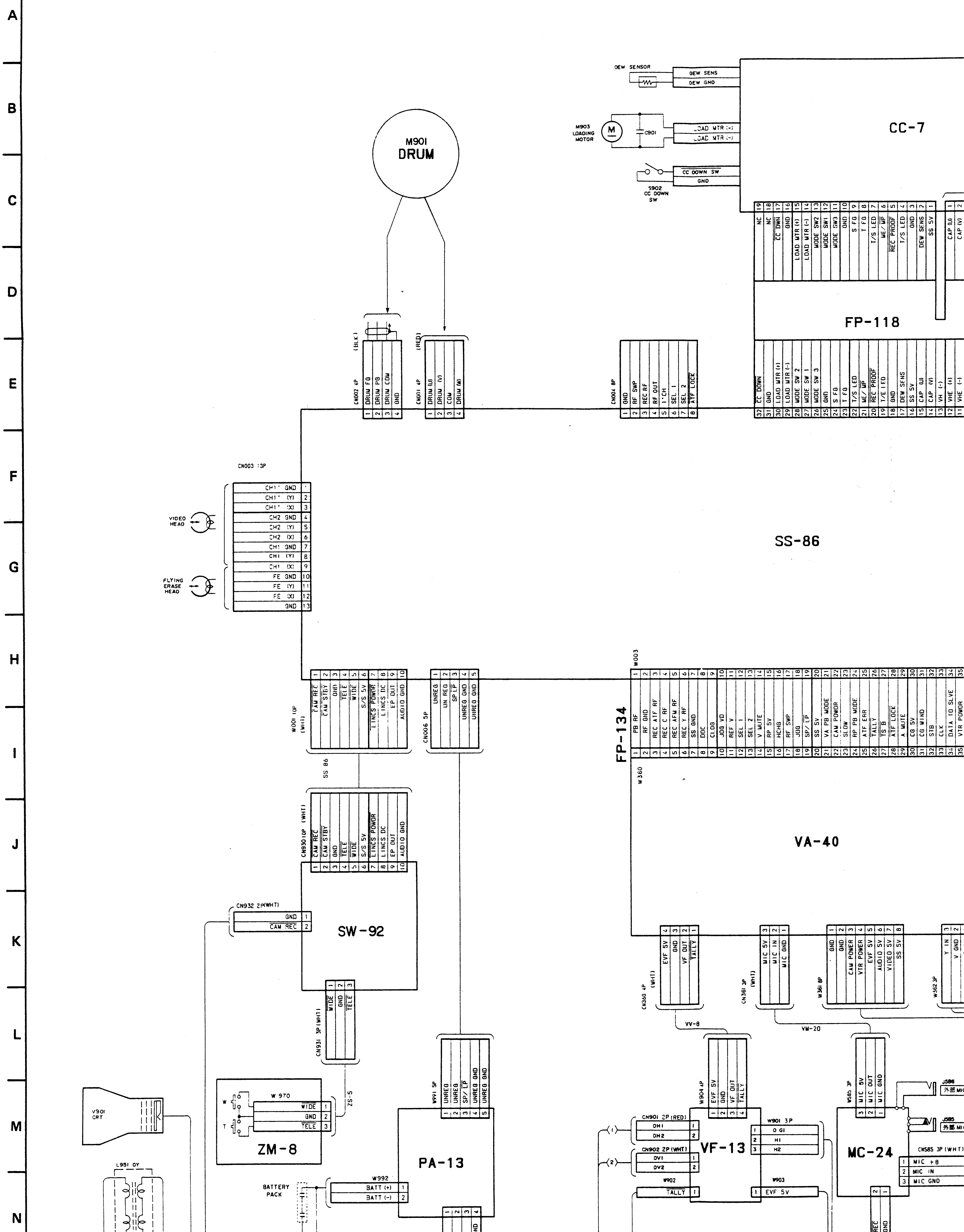
( ) near the board name indicates the schematic diagram page.


VF-13 BOARD (See page 132.)
W 903
TALLY
W 902
EVF5V
CN903
90
4
3
IC901 ⑪
2.6Vp-p
H
IC901 ⑨
0.9Vp-p
IC901 ⑭
2Vp-p
CP901(1/4)
H FREQ
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP / MIX
V SYNC SEP
V OSC
V OUT
VCC 1
VCC 2
CP901(1/4)
V SIZE
CP901
CONTRAST
Q904
VIDEO AMP
L901
Q902
H.OUT INHIBIT
Q903
H.OUT
H SIZE
IC901 ⑤
2.2Vp-p
V
IC901 ③
2.2Vp-p
Q903 Ⓒ
48Vp-p
T901 FBT
D903
DUMPER
RV901
FOCUS
CP901(1/4)
BRIGHT
L903
W901
OG1
HI
HV
G3
G2
CRT
V901
G1
H1
G2
G3
HV
CN901
DH1
DH2
L901 DY
H
V
CN902
DV1
DV2

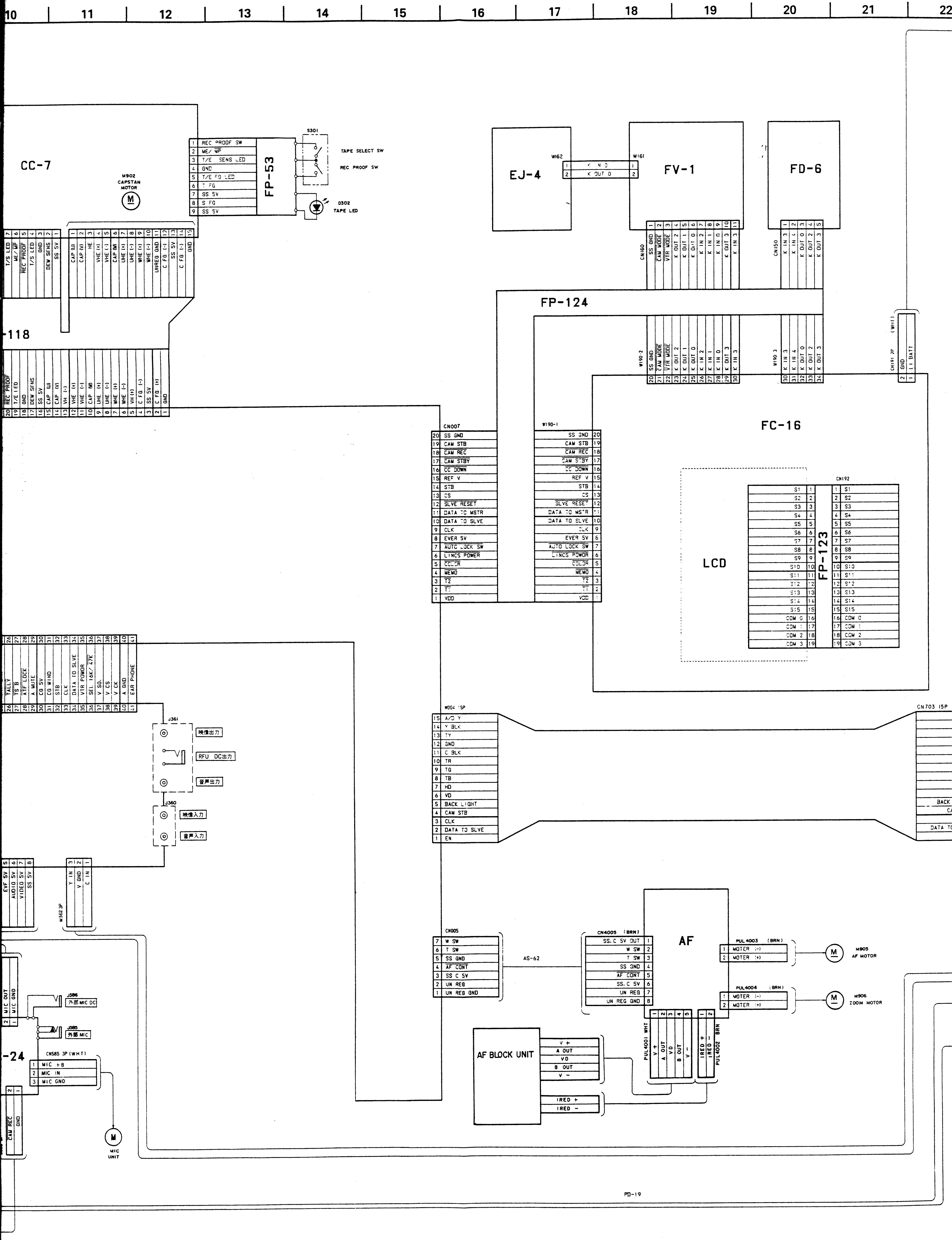
SECTION 4

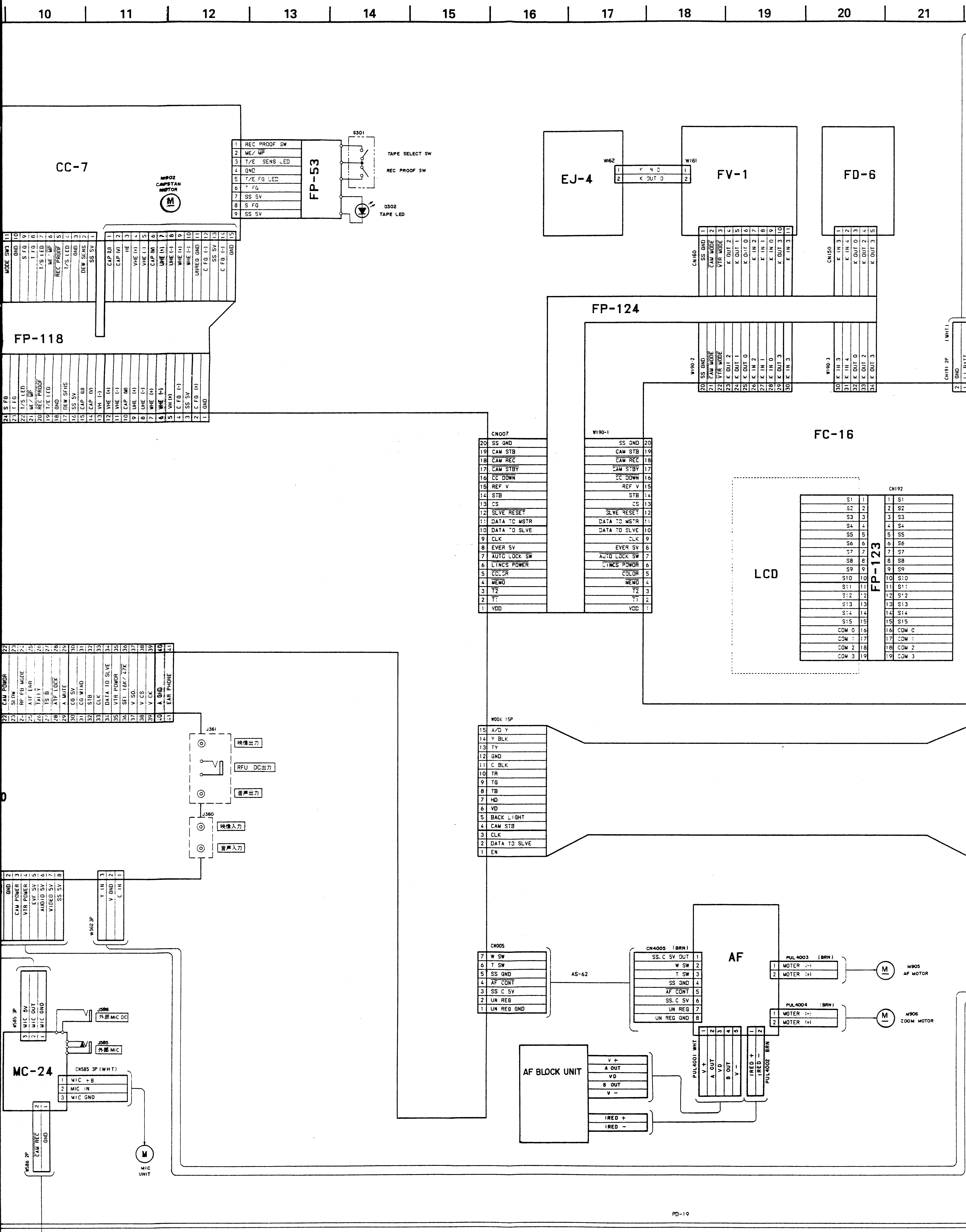
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

4-1. FRAME SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
M901
DRUM
DEW SENSOR
DEW SENS
DEW GND
M903
LOADING
MOTOR
C901
LOAD MTR (+)
LOAD MTR (-)
CC DOWN SW
GND
S902
CC DOWN
SW
CC-7
FP-118
CN002 4P
(BLK)
DRUM FG
DRUM PG
DRUM COM
GND
CN001 4P
(RED)
DRUM (U)
DRUM (V)
COM
DRUM (W)
CN004 8P
GND
RF SWP
REC RF
RF OUT
1 CH
SEL 1
SEL 2
ATF LOCK
CN003 13P
CH1' GND
CH1' (Y)
CH1' (X)
CH2 GND
CH2 (Y)
CH2 (X)
CH1 GND
CH1 (Y)
CH1 (X)
FE GND
FE (Y)
FE (X)
GND
VIDEO
HEAD
FLYING
ERASE
HEAD
SS-86
W001 10P
(WHT)
CAM REC
CAM STBY
GND
TELE
WIDE
S/S 5V
LINCS POWER
LINCS DC
EP OUT
AUDIO GND
CN006 5P
UNREG
UN REG
SP/LP
UNREG GND
UNREG GND
W003
FP-134
W360
VA-40
CN930 10P (WHT)
CN932 2P(WHT)
CAM REC
SW-92
CN931 3P (WHT)
ZS-5
W 970
WIDE
GND
TELE
ZM-8
W991 5P
PA-13
W992
BATT (+)
BATT (-)
BATTERY
PACK
W990 4P
L1 3V
GND
UNREG
UNREG GND
V901
CRT
L951 DY
CN360 4P
(WHT)
EVF 5V
GND
VF OUT
TALLY
VV-8
CN361 3P
MIC 5V
MIC IN
MIC GND
VM-20
W361 8P
CAM POWER
VTR POWER
EVF 5V
AUDIO 5V
VIDEO 5V
SS 5V
W362 3P
W904 4P
CN901 2P (RED)
OH1
OH2
CN902 2P (WHT)
OV1
OV2
VF-13
W901 3P
O G1
H1
H2
W902
TALLY
W903
EVF 5V
TL-19
TL-18
W951
W585 3P
MC-24
J586
J585
CN585 3P (WHT)
MIC +B
MIC IN
MIC GND
W586 2P
CAM REC
SM-41

FRAME FRAME


10
11
12
13
14
15
16
17
18
19
20
21
22
CC-7
M902 CAPSTAN MOTOR
FP-53
REC PROOF SW
ME/ MP
T/E SENS LED
GND
T/E FG LED
T FG
SS 5V
S FG
SS 5V
S301
TAPE SELECT SW
REC PROOF SW
D302 TAPE LED
-118
T/S LED
ME/ MP
REC PROOF
T/S LED
GND
DEW SENS
SS 5V
CAP (U)
CAP (V)
HE
VHE (+)
VHE (-)
CAP (W)
UHE (+)
UHE (-)
WHE (+)
WHE (-)
UNREG GND
C FG (-)
SS 5V
C FG (+)
GND
EJ-4
W162
W161
K IN 0
K OUT 0
FV-1
FD-6
CN160
SS GND
CAM MODE
VTR MODE
K OUT 2
K OUT 1
K OUT 0
K IN 2
K IN 1
K IN 0
K OUT 3
K IN 3
CN150
K IN 4
FP-124
W190-2
W190-3
CN191 2P (WHT)
GND
LI BATT
FC-16
CN007
W190-1
SS GND
CAM STB
CAM REC
CAM STBY
CC DOWN
REF V
STB
CS
SLVE RESET
DATA TO MSTR
DATA TO SLVE
CLK
EVER 5V
AUTO LOCK SW
LINCS POWER
COLOR
MEMO
T2
T1
VDD
CN192
LCD
FP-123
S1 … S15
COM 0
COM 1
COM 2
COM 3
TALLY
TS B
ATF LOCK
A MUTE
CQ 5V
CQ WIND
STB
CLK
DATA TO SLVE
VTR POWOR
SEL 16K/ 47K
V SD.
V CS
V CK
A GND
EAR PHONE
J361
映像出力
RFU DC出力
音声出力
J360
映像入力
音声入力
W004 15P
A/D Y
Y BLK
TY
GND
C BLK
TR
TG
TB
HD
VD
BACK LIGHT
CAM STB
CLK
DATA TO SLVE
EN
CN703 15P
BACK
DATA TO
EVF 5V
AUDIO 5V
VIDEO 5V
SS 5V
W362 3P
Y IN
V GND
C IN
MIC OUT
MIC GND
J586
外部MIC DC
J585
外部MIC
-24
CN585 3P (WHT)
MIC +B
MIC IN
MIC GND
CAM REC
GND
MIC UNIT
CN005
W SW
T SW
SS GND
AF CONT
SS C 5V
UN REG
UN REG GND
AS-62
CN4005 (BRN)
SS. C 5V OUT
AF
PUL4003 (BRN)
MOTER (-)
MOTER (+)
M905 AF MOTOR
PUL4004 (BRN)
M906 ZOOM MOTOR
AF BLOCK UNIT
V +
A OUT
VD
B OUT
V -
IRED +
IRED -
PUL4001 WHT
PUL4002 BRN
PD-19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11
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15
16
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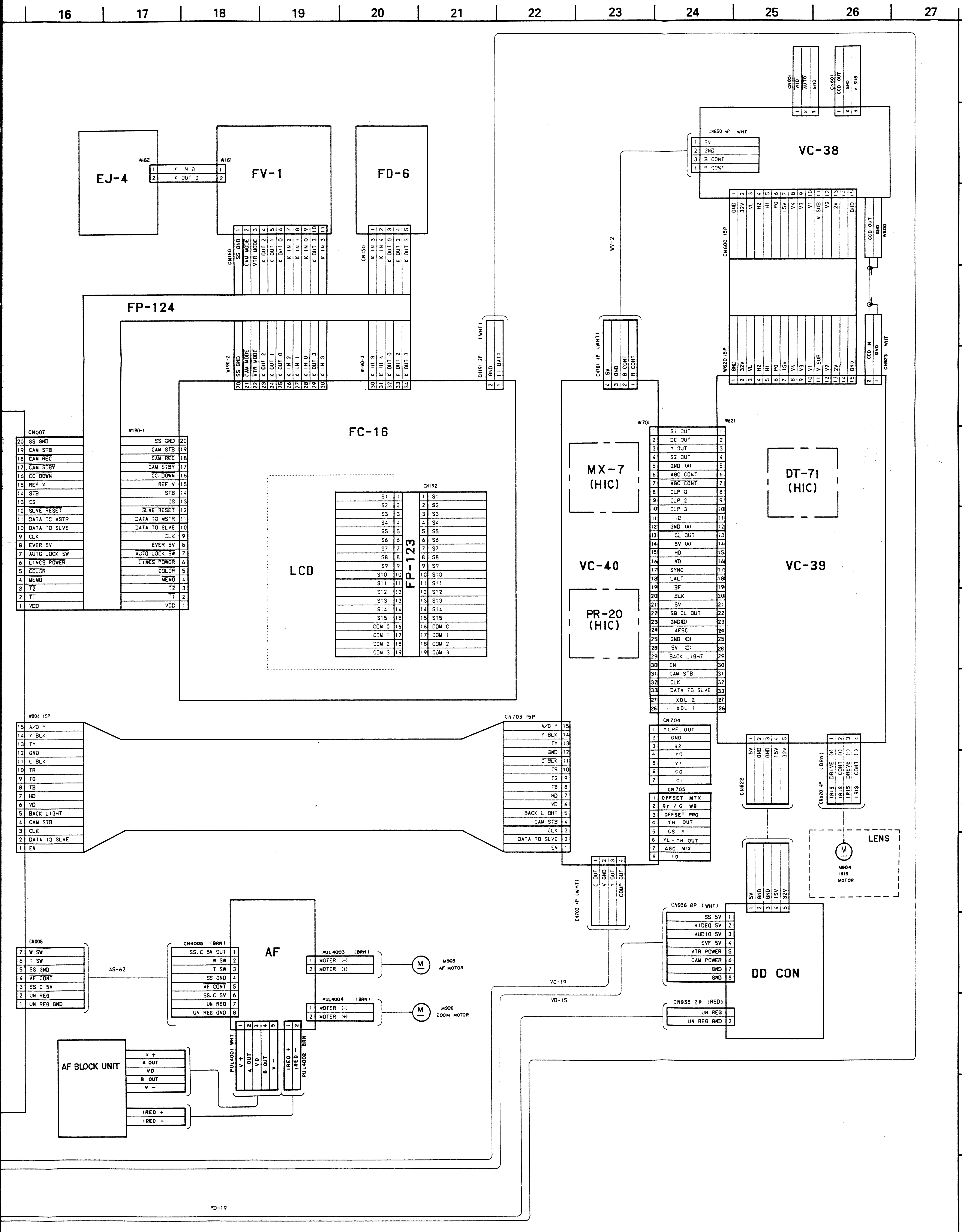
18
19
20
21
CC-7
M902 CAPSTAN MOTOR
FP-53
S301
TAPE SELECT SW
REC PROOF SW
D302 TAPE LED
REC PROOF SW
ME/ MP
T/E SENS LED
GND
T/E FG LED
T FG
SS 5V
S FG
SS 5V
EJ-4
W162
W161
K IN 0
K OUT 0
FV-1
FD-6
CN160
CN150
FP-124
FP-118
W190-2
W190-3
CN191 2P
CN007
W190-1
SS GND
CAM STB
CAM REC
CAM STBY
CC DOWN
REF V
STB
CS
SLVE RESET
DATA TC MSTR
DATA TO SLVE
CLK
EVER 5V
AUTO LOCK SW
LINCS POWER
COLOR
MEMO
T2
T1
VDD
FC-16
LCD
FP-123
CN192
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
COM 0
COM 1
COM 2
COM 3
CAM POWER
SLOW
RF FB MODE
TALLY
TS B
ATF LOCK
A MUTE
CG 5V
CG WIND
DATA TO SLVE
VTR POWER
SEL 16K/ 47K
EAR PHONE
J361
映像出力
RFU DC出力
音声出力
J360
映像入力
音声入力
W004 15P
A/D Y
Y BLK
TY
GND
C BLK
TR
TG
TB
HD
VD
BACK LIGHT
CAM STB
CLK
DATA TO SLVE
EN
W362 3P
Y IN
V GND
C IN
W585 3P
MIC 5V
MIC OUT
MIC GND
J586
外部MIC DC
J585
外部MIC
MC-24
CN585 3P (WHT)
MIC +B
MIC IN
MIC GND
W586 2P
CAM REC
GND
MIC UNIT
CN005
W SW
T SW
SS GND
AF CONT
SS C 5V
UN REG
UN REG GND
AS-62
CN4005 (BRN)
SS.C 5V OUT
AF
PUL4003 (BRN)
MOTER (-)
MOTER (+)
M905 AF MOTOR
PUL4004 (BRN)
M906 ZOOM MOTOR
AF BLOCK UNIT
V +
A OUT
VO
B OUT
V -
IRED +
IRED -
PUL4001 WHT
PUL4002 BRN
PD-19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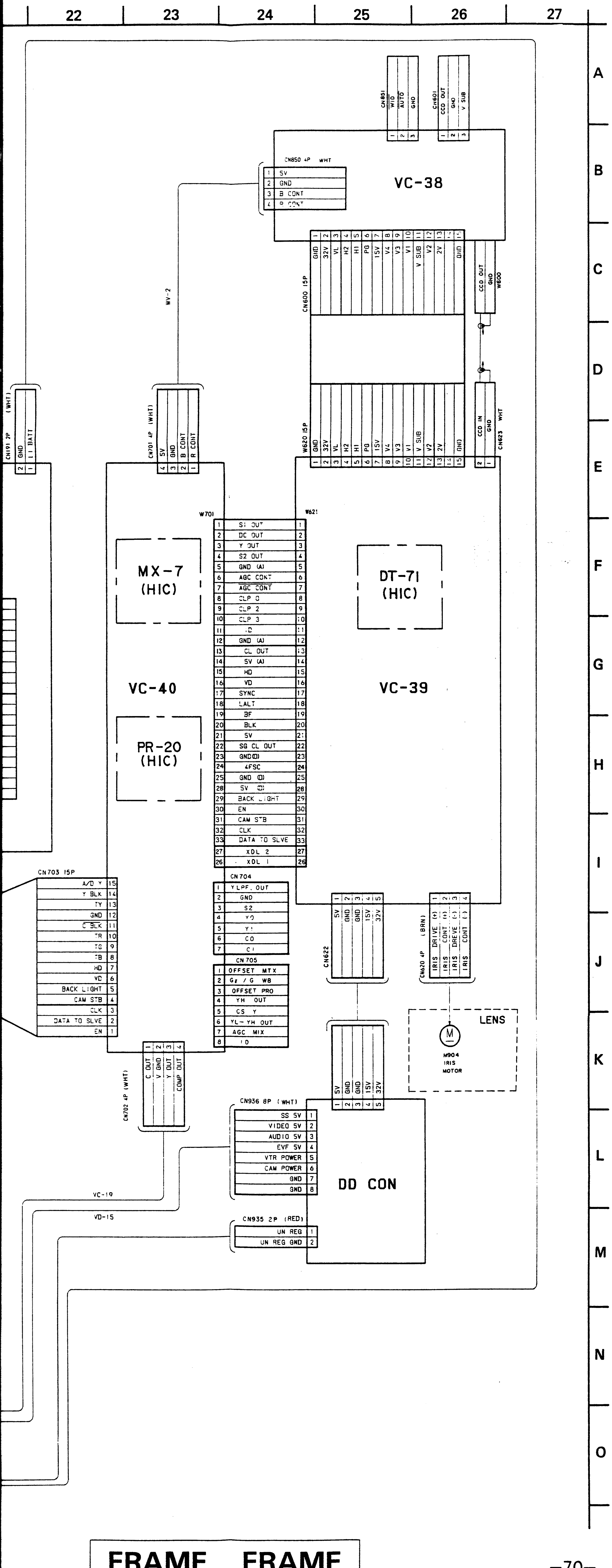
17
18
19
20
21
22
23
24
25
26
27
EJ-4
W162
K IN 0
K OUT 0
W161
FV-1
FD-6
CN160
SS GND
CAM MODE
VTR MODE
K OUT 2
K OUT 1
K OUT 0
K IN 2
K IN 1
K IN 0
K OUT 3
K IN 3
CN150
K IN 3
K IN 4
K OUT 0
K OUT 2
K OUT 3
FP-124
W190-2
W190-3
CN191 2P (WHT)
GND
LI BATT
FC-16
CN007
W190-1
SS GND
CAM STB
CAM REC
CAM STBY
CC DOWN
REF V
STB
CS
SLVE RESET
DATA TO MSTR
DATA TO SLVE
CLK
EVER 5V
AUTO LOCK SW
LINCS POWER
COLOR
MEMO
T2
T1
VDD
LCD
FP-123
CN192
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
COM 0
COM 1
COM 2
COM 3
W004 15P
CN703 15P
A/D Y
Y BLK
TY
GND
C BLK
TR
TG
TB
HD
VD
BACK LIGHT
CAM STB
CLK
DATA TO SLVE
EN
WV-2
CN701 4P (WHT)
5V
GND
B CONT
R CONT
VC-40
MX-7 (HIC)
PR-20 (HIC)
W701
W621
S1 OUT
DC OUT
Y OUT
S2 OUT
GND (A)
AGC CONT
CLP 0
CLP 2
CLP 3
ID
CL OUT
5V (A)
HD
VD
SYNC
LALT
BF
BLK
5V
SG CL OUT
GND(D)
4FSC
GND (D)
5V (D)
BACK LIGHT
EN
CAM STB
CLK
DATA TO SLVE
XOL 2
XOL 1
CN704
YLPF. OUT
GND
S2
Y0
Y1
C0
C1
CN705
OFFSET MTX
GR / G WB
OFFSET PRO
YH OUT
CS Y
YL-YH OUT
AGC MIX
IO
CN702 4P (WHT)
C OUT
V GND
Y OUT
COMP OUT
VC-38
CN851
WIO
AUTO
GND
CN601
CCD OUT
GND
V SUB
CN850 4P WHT
5V
GND
B CONT
R CONT
CN600 15P
W620 15P
GND
32V
VL
H2
H1
PG
15V
V4
V3
V1
V SUB
V2
2V
CCD OUT
GND
W600
CCD IN
GND
CN623 WHT
VC-39
DT-71 (HIC)
CN622
5V
GND
GND
15V
32V
CN620 4P (BRN)
IRIS DRIVE (+)
IRIS CONT (+)
IRIS DREVE (-)
IRIS CONT (-)
LENS
M904 IRIS MOTOR
CN936 8P (WHT)
SS 5V
VIDEO 5V
AUDIO 5V
EVF 5V
VTR POWER
CAM POWER
GND
GND
DD CON
CN935 2P (RED)
UN REG
UN REG GND
VC-19
VD-15
CN005
W SW
T SW
SS GND
AF CONT
SS C 5V
UN REG
UN REG GND
AS-62
CN4005 (BRN)
SS.C 5V OUT
W SW
T SW
SS GND
AF CONT
SS.C 5V
UN REG
UN REG GND
AF
PUL4003 (BRN)
MOTER (-)
MOTER (+)
M905 AF MOTOR
PUL4004 (BRN)
MOTER (-)
MOTER (+)
M906 ZOOM MOTOR
PUL4001 WHT
V +
A OUT
VD
B OUT
V -
PUL4002 BRN
IRED +
IRED -
AF BLOCK UNIT
V +
A OUT
VD
B OUT
V -
IRED +
IRED -
PD-19

FRAME FRAME


22
23
24
25
26
27
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
CN851
W/D
AUTO
GND
CN601
CCD OUT
GND
V SUB
CN850 4P WHT
5V
GND
B CONT
R CONT
VC-38
CN600 15P
GND
32V
VL
H2
H1
PG
15V
V4
V3
V1
V SUB
V2
2V
GND
CCD OUT
GND
W600
WV-2
W620 15P
CCD IN
GND
CN623 WHT
CN191 2P (WHT)
GND
I.I BATT
CN701 4P (WHT)
5V
GND
B CONT
R CONT
W701
W621
S1 OUT
DC OUT
Y OUT
S2 OUT
GND (A)
AGC CONT
AGC CONT
CLP 0
CLP 2
CLP 3
ID
GND (A)
CL OUT
5V (A)
HD
VD
SYNC
LALT
BF
BLK
5V
SG CL OUT
GND (D)
4FSC
GND (D)
5V (D)
BACK LIGHT
EN
CAM STB
CLK
DATA TO SLVE
XDL 2
XDL 1
MX-7 (HIC)
VC-40
PR-20 (HIC)
DT-71 (HIC)
VC-39
CN703 15P
A/D Y
Y BLK
TY
GND
C BLK
TR
TG
TB
HD
VD
BACK LIGHT
CAM STB
CLK
DATA TO SLVE
EN
CN704
YLPF. OUT
GND
S2
YO
Y1
CO
C1
CN705
OFFSET MTX
GR / G WB
OFFSET PRO
YH OUT
CS Y
YL-YH OUT
AGC MIX
ID
CN622
5V
GND
GND
15V
32V
CN620 4P (BRN)
IRIS DRIVE (+)
IRIS CONT (+)
IRIS DRIVE (-)
IRIS CONT (-)
LENS
M
M904 IRIS MOTOR
CN702 4P (WHT)
C OUT
V OUT
Y OUT
COMP OUT
CN936 8P (WHT)
SS 5V
VIDEO 5V
AUDIO 5V
EVF 5V
VTR POWER
CAM POWER
GND
GND
DD CON
VC-19
VD-15
CN935 2P (RED)
UN REG
UN REG GND

FRAME FRAME

Precautions for replacement of CCD imager block.

- After the CCD imager block has been replaced, perform the entire adjustments of the camera section.
- CCD imager is structurally in case of being broken down by static electricity. For this reason, take care to handle it as well as MOS IC. Moreover, care should be taken for dust not to be stuck on the light reseiving section and for strong light not to get into there.

When indicating parts by reference number, please include the board name.

FRAM

4-2. VC-38 (CCD IMAGER), VC-39 (TIMING/SYNC GENERATOR), VC-40 (CAMERA MATRIX, CAMERA ENCODER, TITLE MIX) PRINTED WIRING BOARDS

– Ref. No. VC-38, VC-39, VC-40 BOARDS: 1,000 series –

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ▨ : Pattern from the side which enables seeing.
- Circled numbers refer to waveforms.

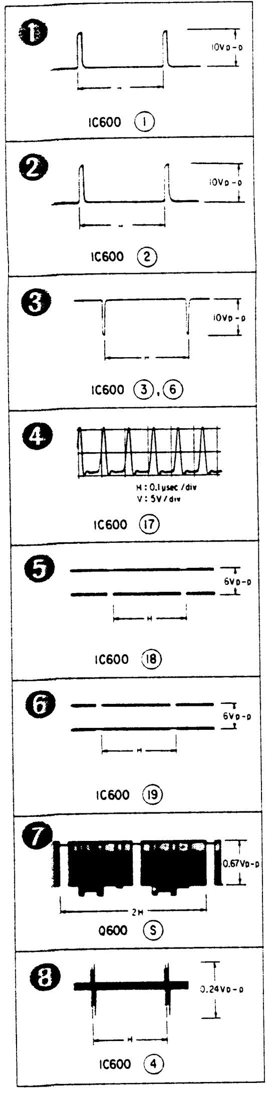
For schematic diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W (Chip resistors: 1/10W) unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in µF unless otherwise noted. pF: µµF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- ▬ : B+ line.
- Voltages are dc between measurement points and ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- ⇨ : IN/OUT direction of B line (+, –).
- Readings are taken with a color-bar signal input.
- Circled numbers refer to waveforms.

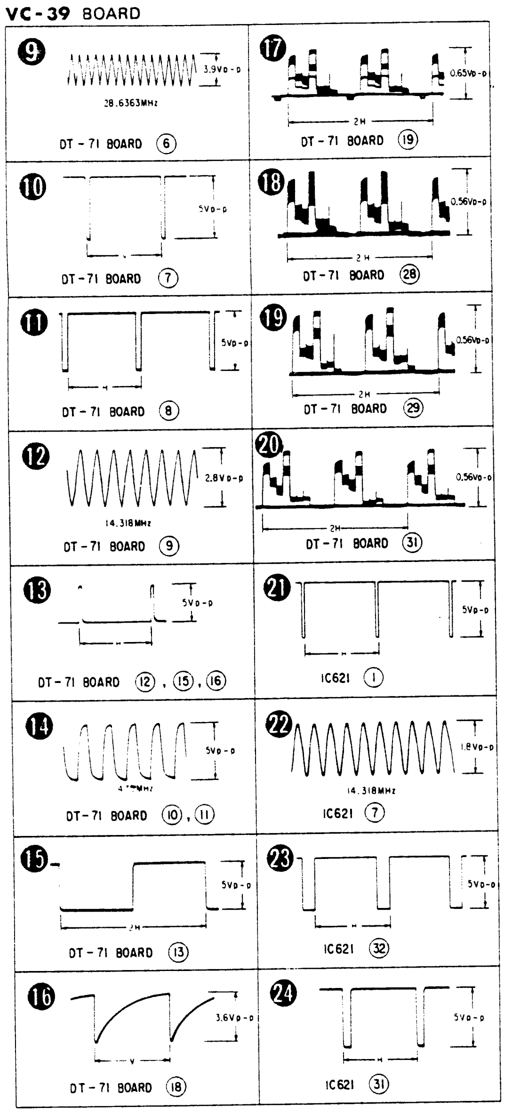
When indicating parts
ence number, please in
board name.

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

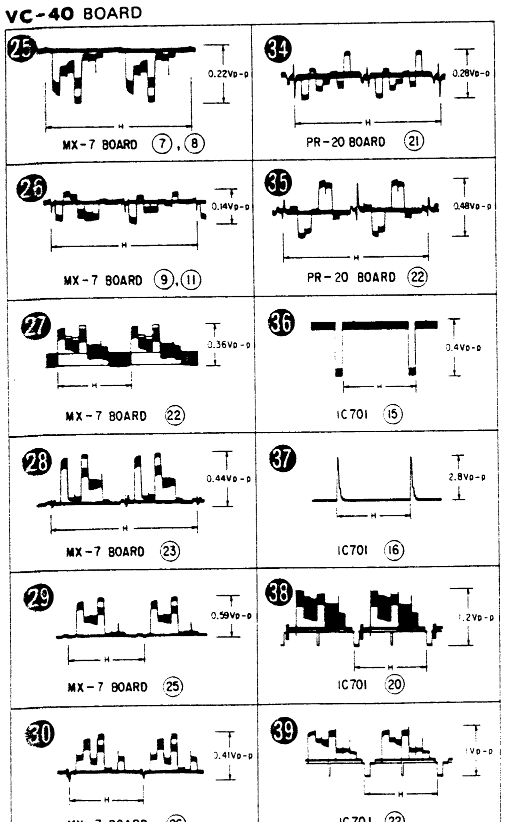
VC-38 BOARD



VC-39 BOARD



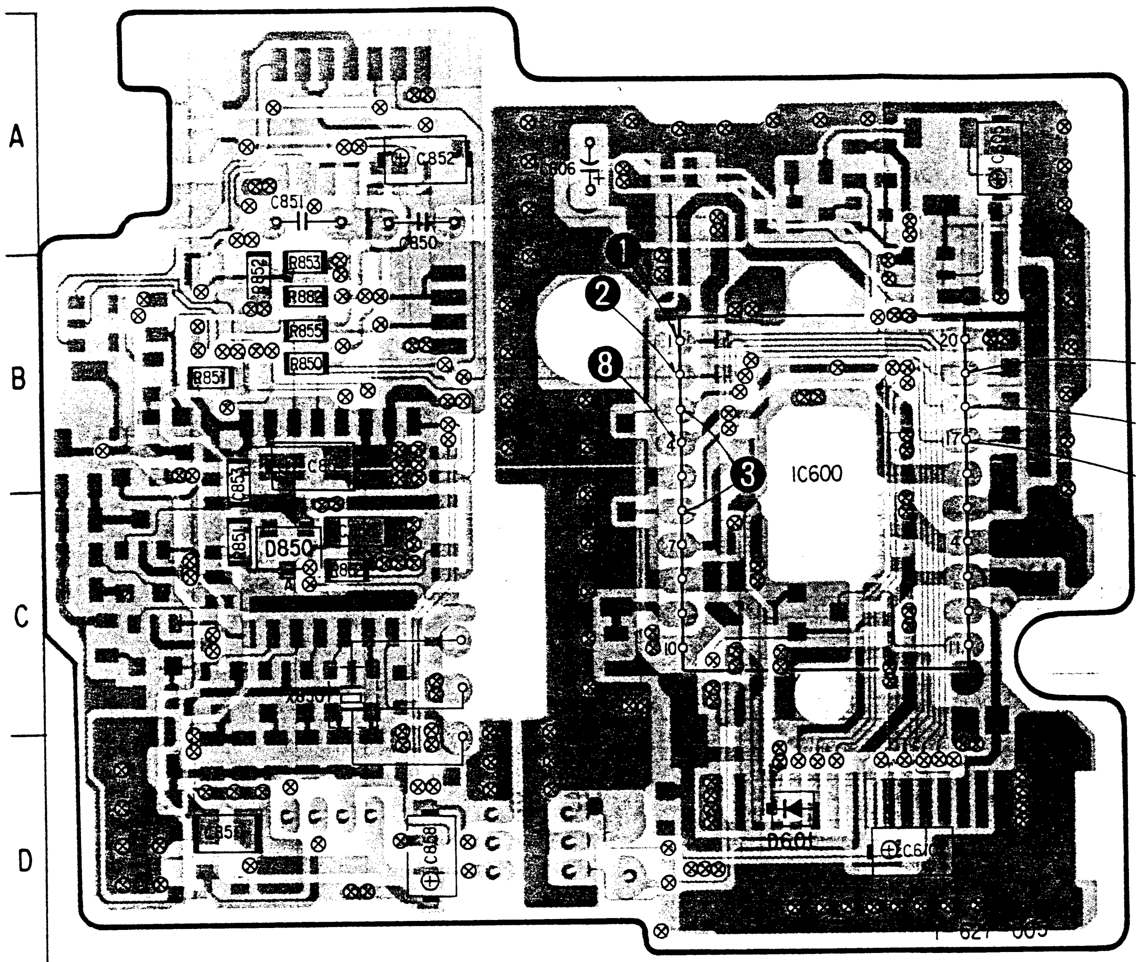
VC-40 BOARD



VC-38 BOARD

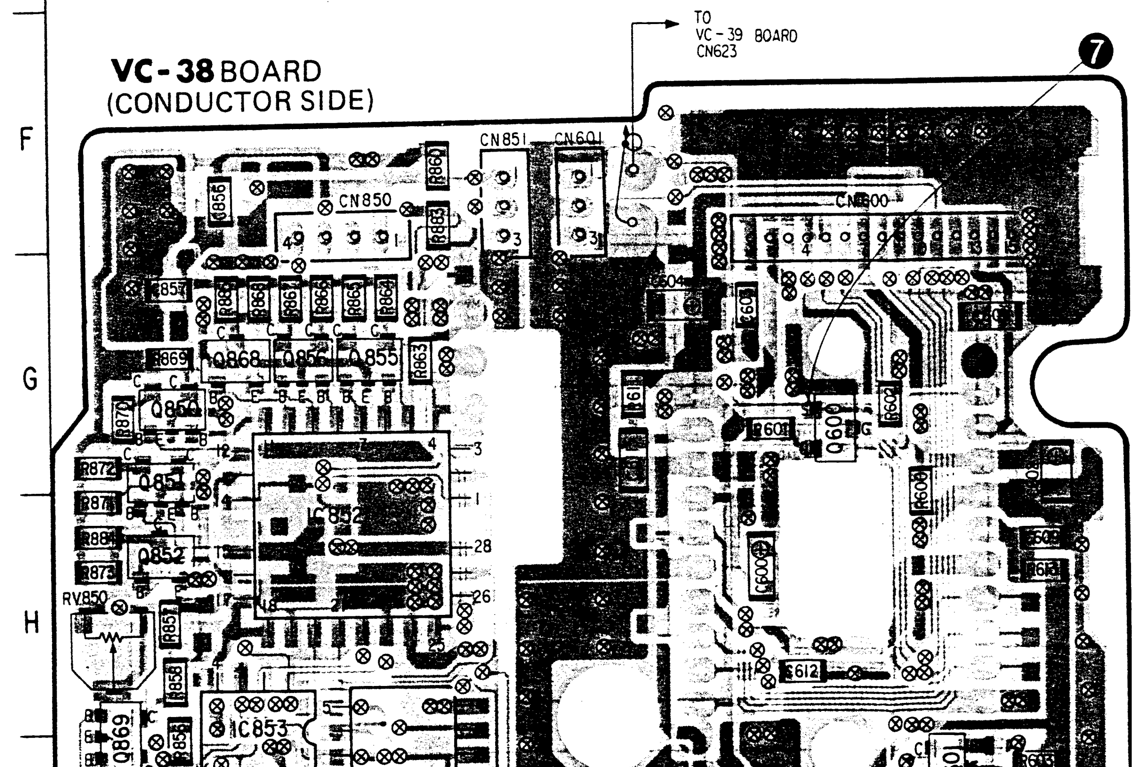
CN600	F-4
CN601	F-3
CN850	F-2
CN851	F-3
D600	I-4
D601	D-4
D850	C-2
IC850	I-2
IC851	I-2
IC852	H-2
IC853	I-2
Q600	G-4
Q601	I-4
Q602	I-4
Q850	G-1
Q851	G-1
Q852	H-1
Q855	G-2
Q856	G-2
Q868	G-1
Q869	H-1
RV600	I-4
RV850	H-1

VC-38 BOARD (COMPONENT SIDE)


A
B
C
D
C852
C851
R852
R853
R855
R850
R851
D850
C858
IC600
D601
1
2
3
8
1-627-005

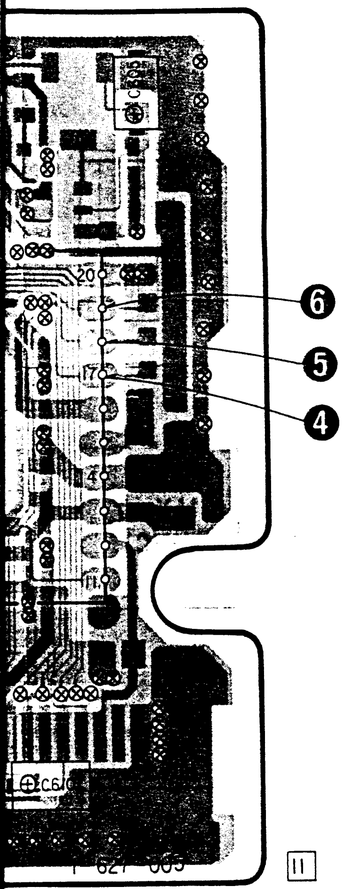
E

VC-38 BOARD (CONDUCTOR SIDE)


TO VC-39 BOARD CN623
7
F
G
H
I
J
CN851
CN601
CN600
CN850
Q868
Q855
Q850
Q851
Q852
R872
R871
R873
RV850
Q869
IC852
IC853
IC850
IC851
SB850
Q600
Q601
Q602
D600
RV600
1-627-005-
1
2
3
4
5

When indicating parts by reference number, please include the board name.

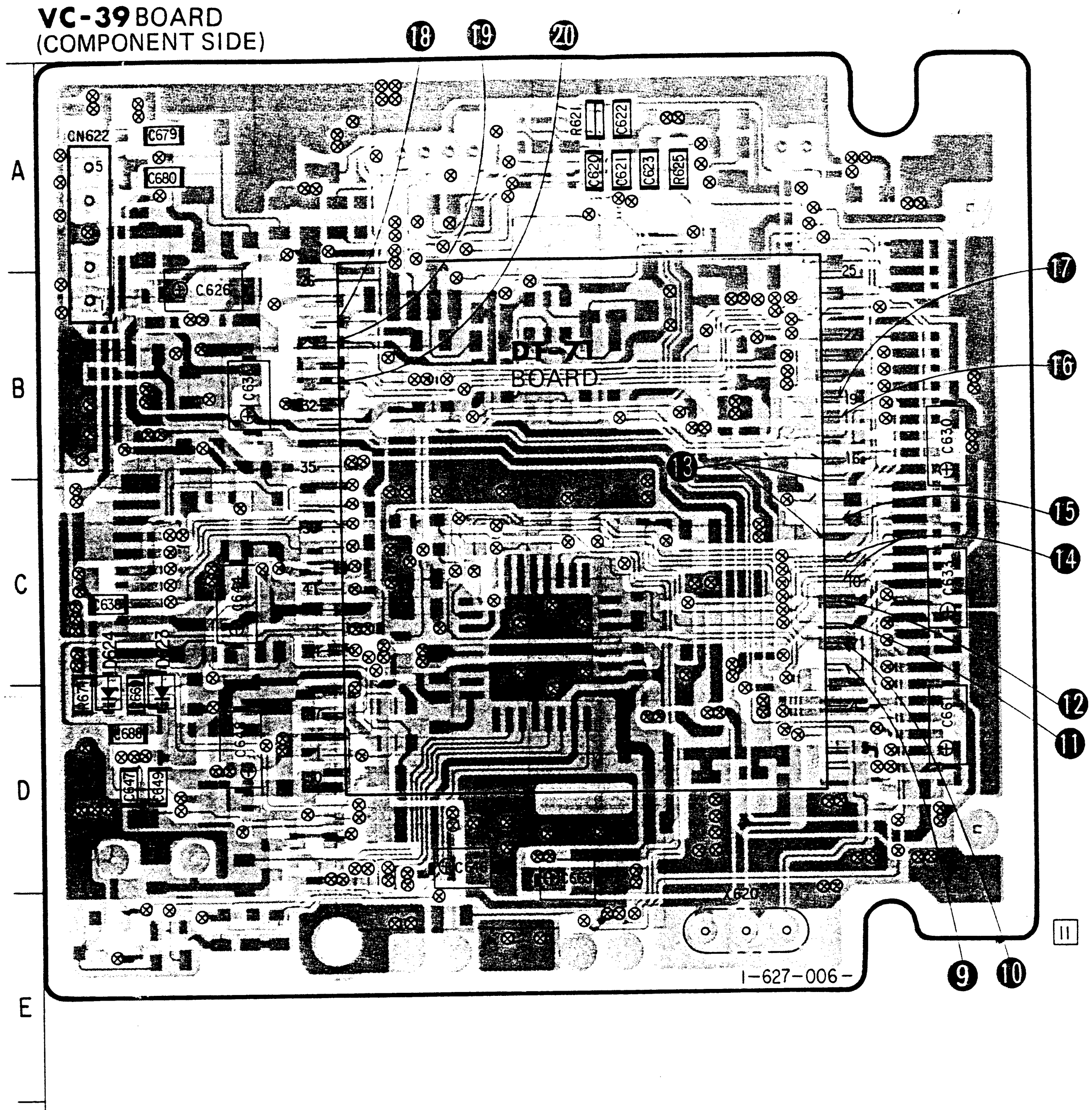
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


6
5
4
20
17
1-627-005
II

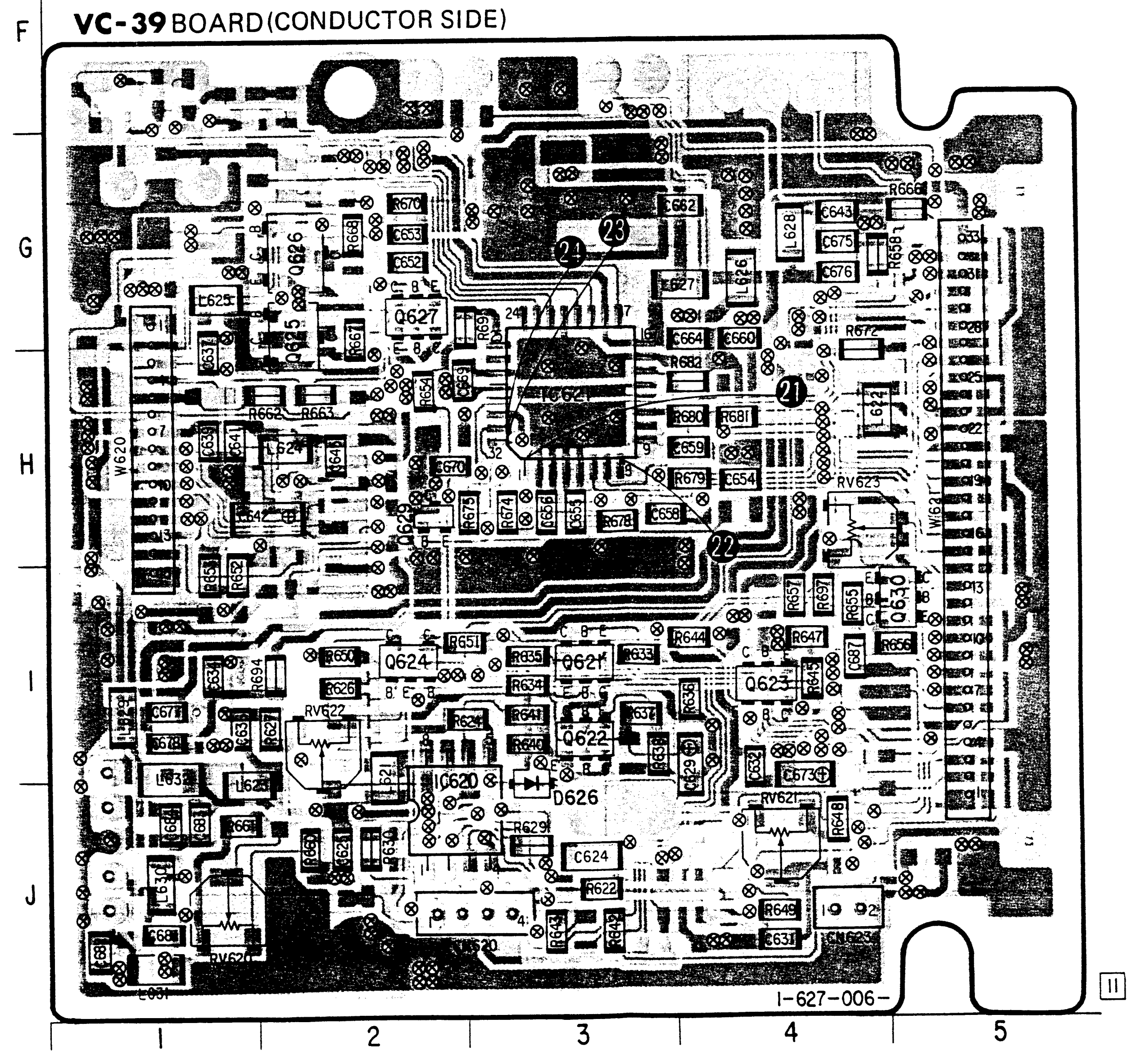
VC-39 BOARD

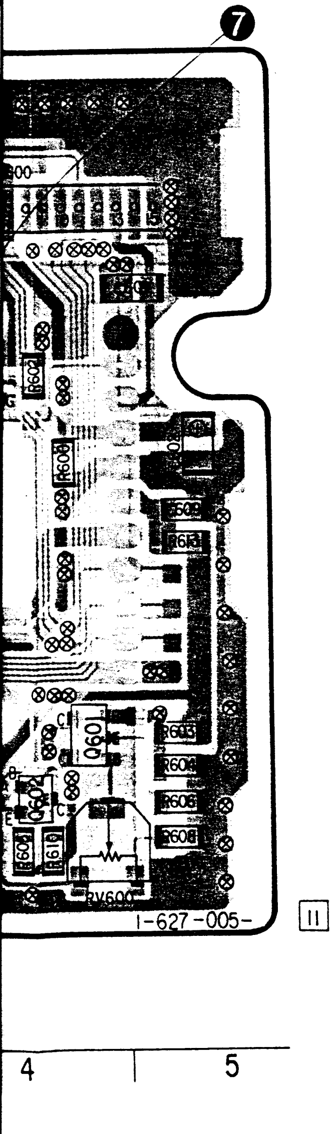
CN620	J-3
CN622	A-1
CN623	J-4
D623	C-1
D624	C-1
D626	J-3
IC620	J-2
IC621	H-3
Q621	I-3
Q622	I-3
Q623	I-4
Q624	I-2
Q625	G-2
Q626	G-2
Q627	G-2
Q629	H-2
Q630	I-5
RV620	J-1
RV621	J-4
RV622	I-2
RV623	H-4

VC-39 BOARD
(COMPONENT SIDE)


18
19
20
A
B
C
D
E
CN622
C679
C680
C626
C622
C621
C623
R621
PI-7
BOARD
25
35
13
17
16
15
14
12
11
9
10
1-627-006-
II

VC-39 BOARD(CONDUCTOR SIDE)

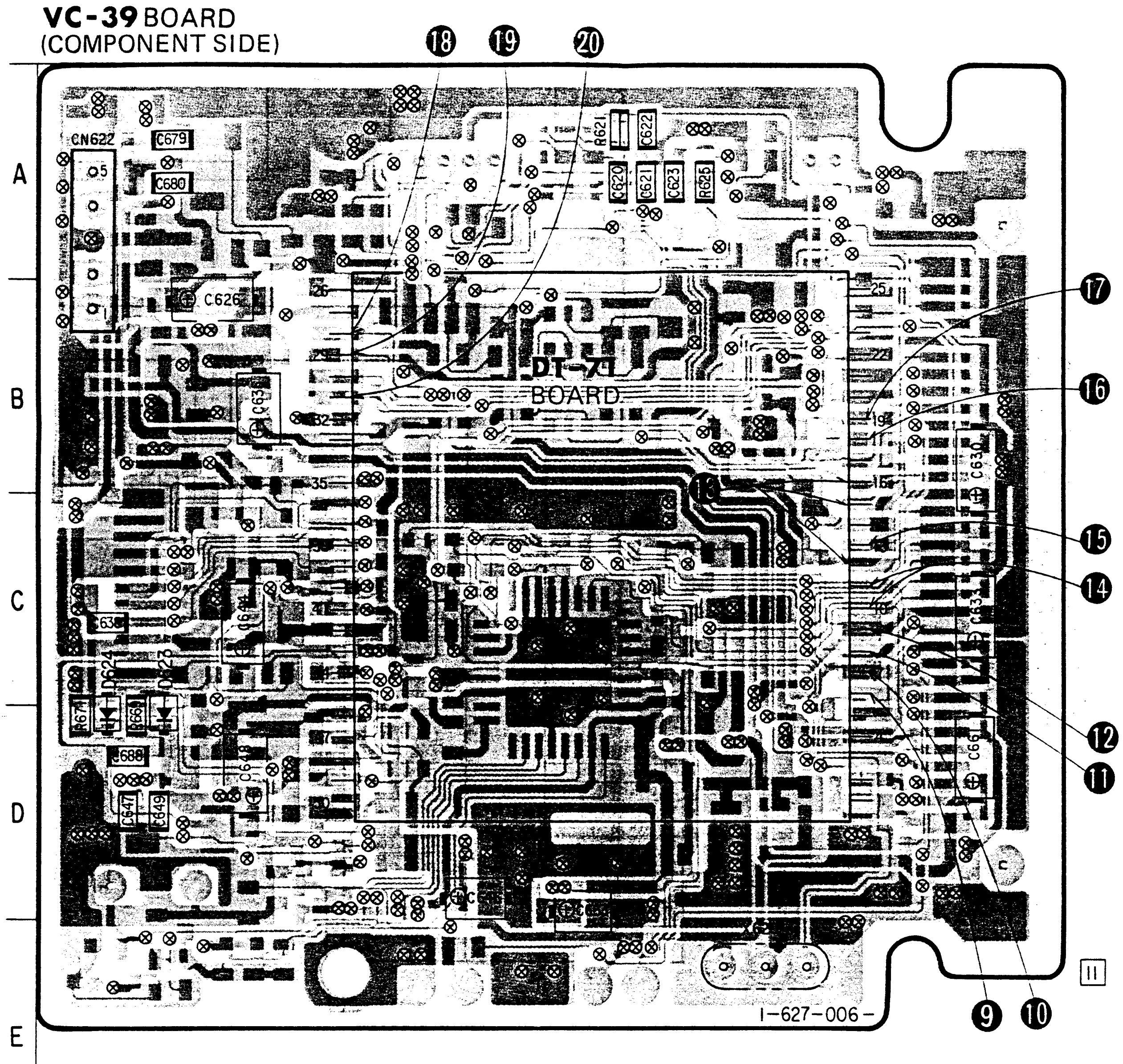

F
G
H
I
J
1
2
3
4
5
23
24
21
22
Q626
Q625
Q627
L625
R670
C653
C652
C662
C664
C660
IC621
R680
R681
C659
R679
C654
R678
C658
L628
C643
C675
C676
R666
R672
RV623
W621
W620
Q630
Q624
Q621
Q623
Q622
RV622
RV621
IC620
D626
C624
R622
R629
CN623
CN620
C631
R648
R647
R644
R651
R650
1-627-006-
II


7
Q601
RV600
1-627-005-
II
4
5

s by refer-
include the

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

VC-39 BOARD
(COMPONENT SIDE)


⑱
⑲
⑳
⑰
⑯
⑮
⑭
⑫
⑪
⑨
⑩
A
B
C
D
E
CN622
C679
C680
C626
C621
C622
C620
C623
R626
R621
DT-71
BOARD
C630
C631
C633
C638
R674
C688
C647
C649
1-627-006-

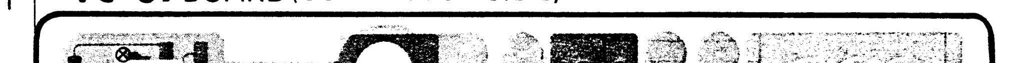
VC-39 BOARD

CN620	J-3
CN622	A-1
CN623	J-4
D623	C-1
D624	C-1
D626	J-3
IC620	J-2
IC621	H-3
Q621	I-3
Q622	I-3
Q623	I-4
Q624	I-2
Q625	G-2
Q626	G-2
Q627	G-2
Q629	H-2
Q630	I-5
RV620	J-1
RV621	J-4
RV622	I-2
RV623	H-4

VC-40 BOARD

CN701	D-5
CN702	C-7
CN703	A-7
CN704	D-2
CN705	D-3
D701	J-4
IC701	I-3
Q701	J-2
Q702	J-2
Q705	G-6
Q706	H-6
Q707	H-6
Q708	F-4
Q709	G-4
Q710	I-3
Q711	H-3
RV701	J-2
RV702	I-2
RV703	H-2
RV704	H-2
RV705	H-2
RV706	G-2
RV707	G-2
RV708	F-4
RV709	I-5
RV710	H-5
RV711	I-6
RV712	J-5
RV713	J-5
RV714	J-6
RV715	I-6
RV716	J-4
RV717	J-4
RV718	J-3
RV719	J-2
RV720	J-2
RV722	H-5
RV724	H-5

VC-39 BOARD (CONDUCTOR SIDE)


F
G
H
I
J
㉓
㉔
㉑
㉒
R676
R668
C653
C652
Q626
Q627
Q625
L625
C637
R661
R662
R663
IC621
L624
W620
C639
C641
C642
C670
R675
R674
C666
C651
R678
C658
R680
R681
C659
R679
C654
R682
C664
C660
C671
L628
C643
C675
C676
R666
R672
RV623
W621
R651
R653
R652
R650
Q624
R626
R635
Q621
R633
R644
Q623
R647
R656
C687
R655
Q630
R694
C634
C677
C678
RV622
R627
R628
IC620
D626
Q622
R629
C624
R622
R646
RV621
R648
L630
C668
RV620
L631
C681
CN620
1-627-006-
1
2
3
4
5

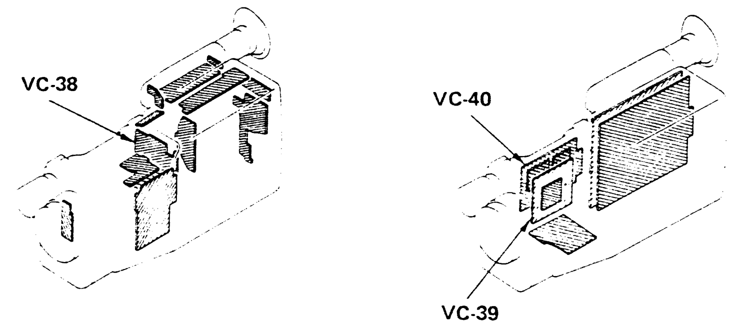
Note:

- ⊗ : Through hole.
- ▨ : Pattern of the rear side.

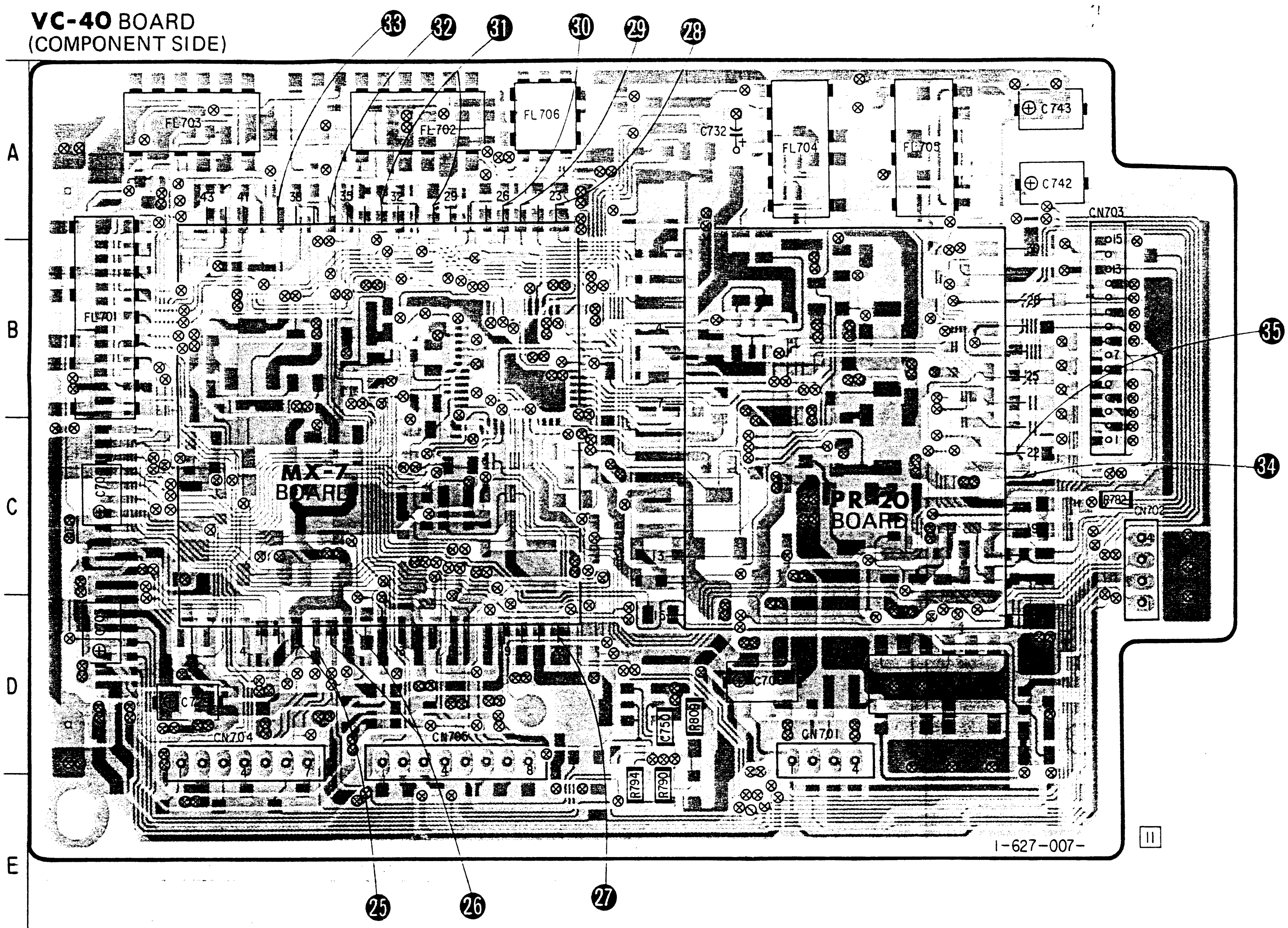
Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

- Digital transistor (VC-39: Q624) is transistor with resistor. Refer to the VC-39 board schematic diagram for digital transistor.


VC-38
VC-40
VC-39

VC-40 BOARD (COMPONENT SIDE)


㉝
㉜
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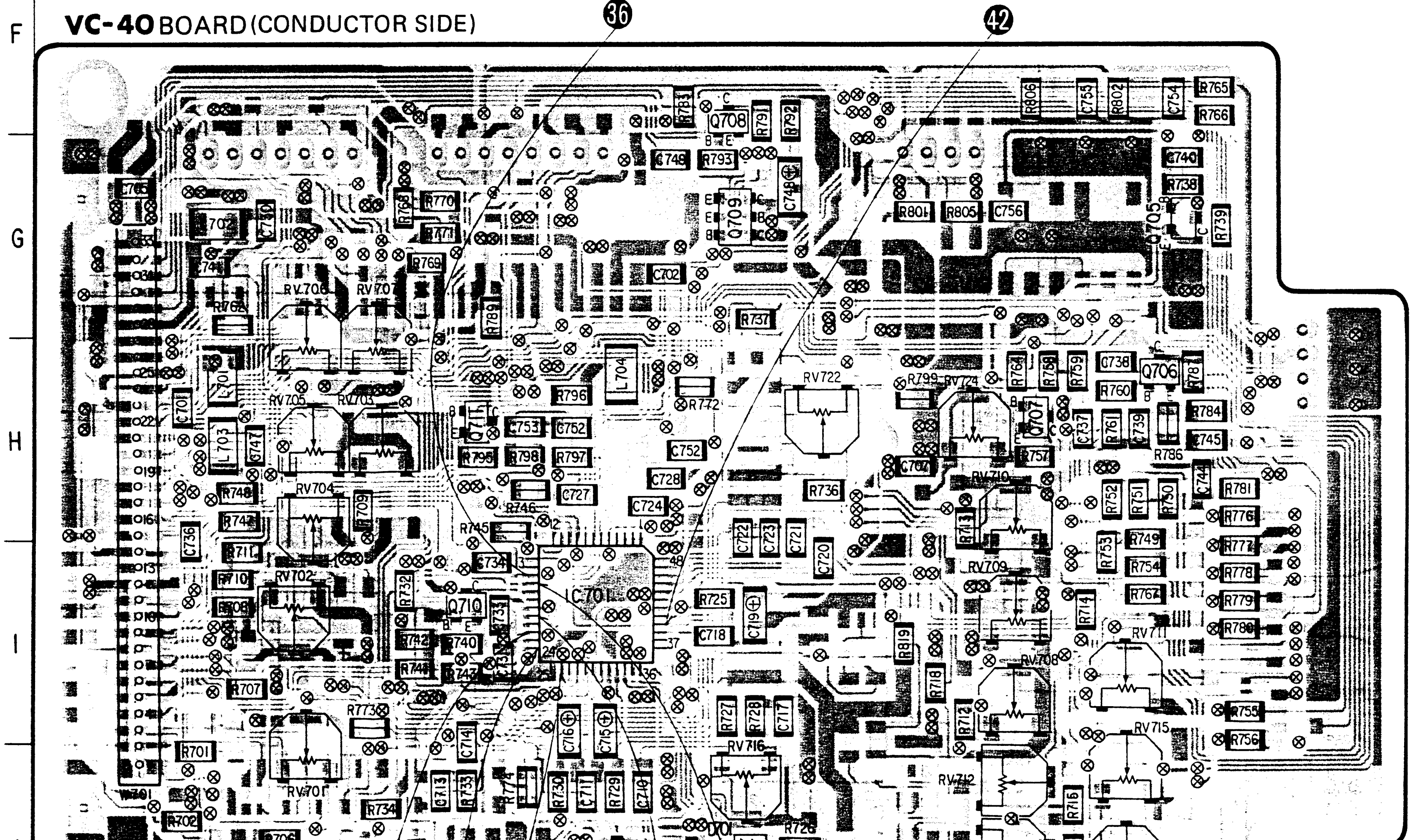
㉞
A
B
C
D
E
FL703
FL702
FL706
C732
FL704
FL705
C743
C742
CN703
FL701
MX-7 BOARD
PR-20 BOARD
CN702
CN704
CN705
CN701
R806
C750
R794
R790
1-627-007-
II
㉕
㉖
㉗

VC-40 BOARD

CN701	D-5
CN702	C-7
CN703	A-7
CN704	D-2
CN705	D-3
D701	J-4
IC701	I-3
Q701	J-2
Q702	J-2
Q705	G-6
Q706	H-6
Q707	H-6
Q708	F-4
Q709	G-4
Q710	I-3
Q711	H-3
RV701	J-2
RV702	I-2
RV703	H-2
RV704	H-2
RV705	H-2
RV706	G-2
RV707	G-2
RV708	F-4
RV709	I-5
RV710	H-5
RV711	I-6
RV712	J-5
RV713	J-5
RV714	J-6
RV715	I-6
RV716	J-4
RV717	J-4
RV718	J-3
RV719	J-2
RV720	J-2
RV722	H-5
RV724	H-5

VC-40 BOARD (CONDUCTOR SIDE)


㊱
㊷
F
G
H
I
J
Q708
Q709
Q705
Q706
Q707
Q710
Q701
Q702
IC701
D701
RV701
RV702
RV703
RV704
RV705
RV706
RV707
RV708
RV709
RV710
RV711
RV712
RV713
RV714
RV715
RV716
RV717
RV718
RV719
RV720
RV722
RV724
1-627-007-
II
1
2
3
4
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6
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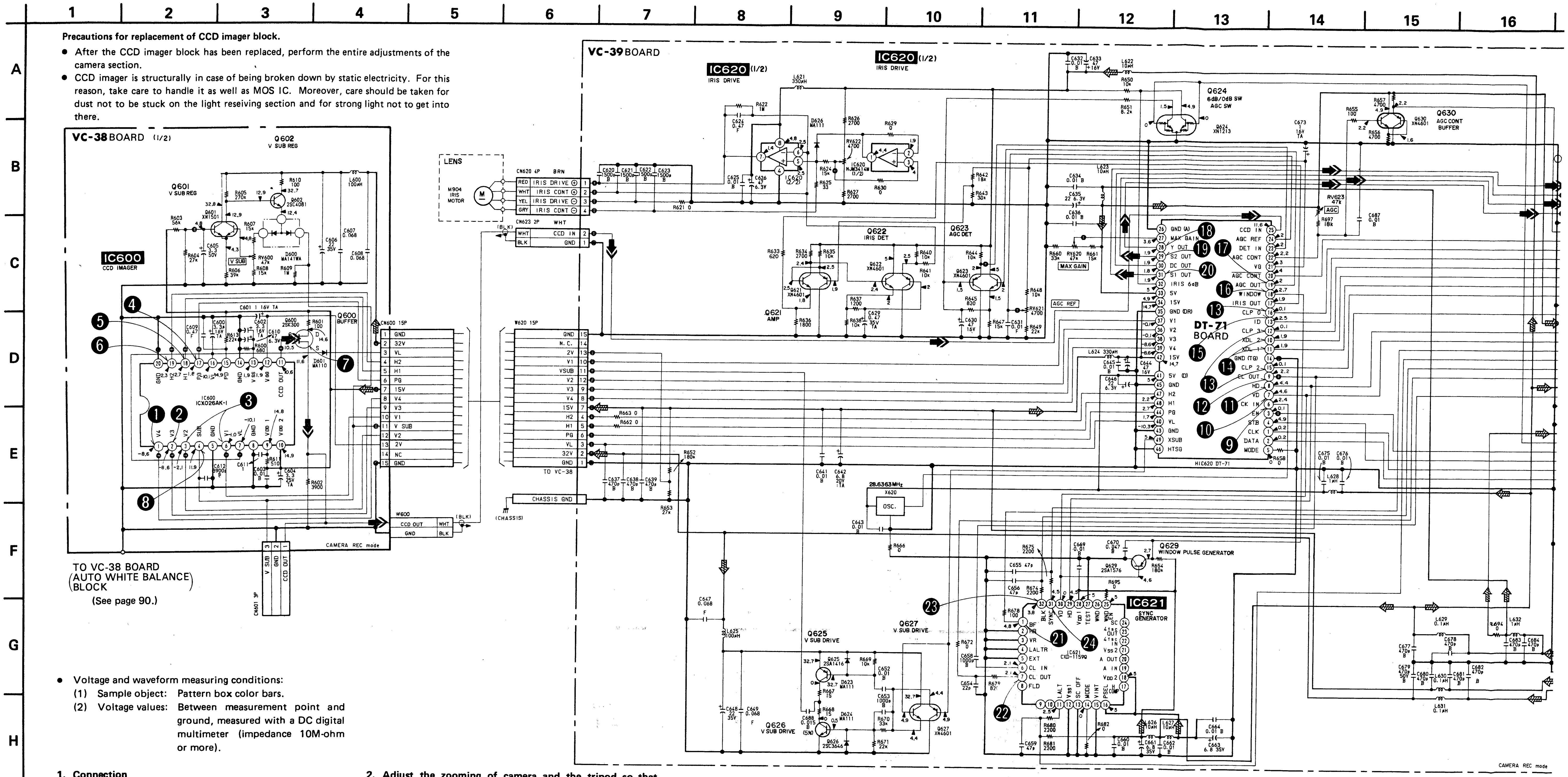
VC-38 (CCD IMAGER), VC-39 (TIMING/SYNC GENERATOR), VC-40 (CAMERA MATRIX, CAMERA ENCODER, TITLE MIX) SCHEMATIC DIAGRAM

– Ref. No. VC-38, VC-39, VC-40 BOARDS: 1,000 series –

Precautions for replacement of CCD imager block.

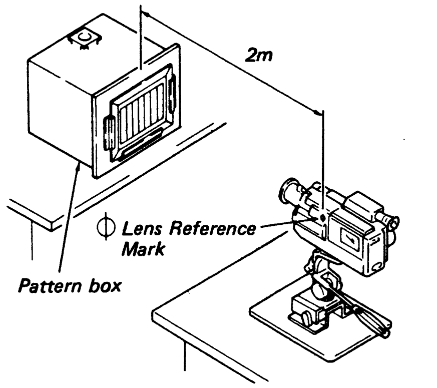
- After the CCD imager block has been replaced, perform the entire adjustments of the camera section.
- CCD imager is structurally in case of being broken down by static electricity. For this reason, take care to handle it as well as MOS IC. Moreover, care should be taken for dust not to be stuck on the light reseiving section and for strong light not to get into there.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H
VC-38 BOARD (1/2)
VC-39 BOARD
IC600 CCD IMAGER
IC600 ICX026AK-1
Q600 BUFFER
Q601 V SUB REG
Q602 V SUB REG
D600 MA141WA
D601 MA110
CN600 15P
GND
32V
VL
H2
H1
PG
15V
V4
V3
V1
V SUB
V2
2V
NC
LENS
M904 IRIS MOTOR
CN620 4P BRN
RED IRIS DRIVE ⊕
WHT IRIS CONT ⊕
YEL IRIS DRIVE ⊖
GRY IRIS CONT ⊖
CN623 2P WHT
CCD IN
GND
W620 15P
TO VC-38
CHASSIS GND
(CHASSIS)
W600
CCD OUT
CAMERA REC mode
IC620 (1/2) IRIS DRIVE
IC620 (2/2)
Q621 AMP
Q622 IRIS DET
Q623 AGC DET
Q624 6dB/0dB SW AGC SW
Q630 AGC CONT BUFFER
MAX GAIN
AGC REF
AGC
DT-71 BOARD
HIC620 DT-71
CCD IN
AGC REF
DET IN
AGC CONT
VG
AGC OUT
WINDOW
IRIS OUT
CLP
ID
XDL
CK IN
EN
STB
CLK
DATA
MODE
GND (A)
MAX GAIN
Y OUT
S2 OUT
DC OUT
S1 OUT
IRIS 6dB
5V
15V
GND (DR)
V1
V2
V3
V4
XSUB
HTSG
X620 28.6363MHz
OSC.
Q625 V SUB DRIVE
Q626 V SUB DRIVE
Q627 V SUB DRIVE
Q629 WINDOW PULSE GENERATOR
IC621 SYNC GENERATOR
CXD-1159Q
BF
HR
VR
LALTR
EXT
CL IN
CL OUT
FLD
TO VC-38 BOARD
(AUTO WHITE BALANCE BLOCK)
(See page 90.)
CN601 3P
V SUB
GND
CCD OUT

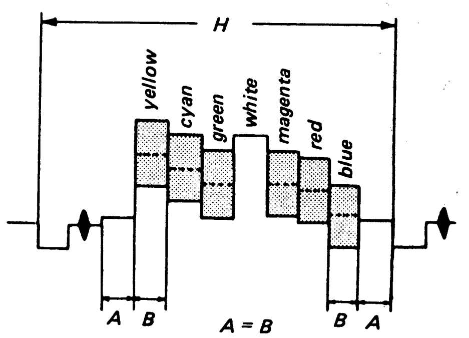
- Voltage and waveform measuring conditions:
  - (1) Sample object: Pattern box color bars.
  - (2) Voltage values: Between measurement point and ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection



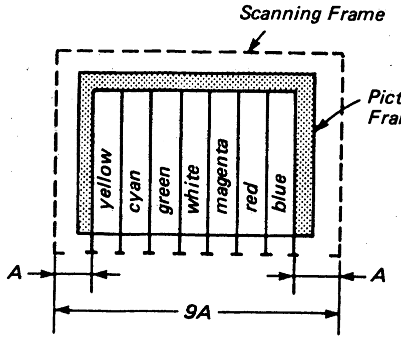
2m
Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.



H
yellow
cyan
green
white
magenta
red
blue
A
B
A = B
B
A

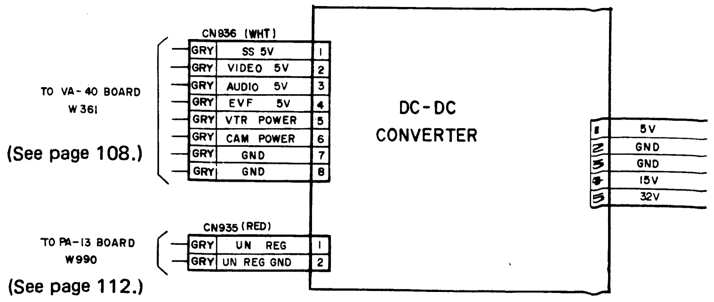
Fig. a Camera output waveform



Scanning Frame
Picture Tube Frame
yellow
cyan
green
white
magenta
red
blue
A
A
9A

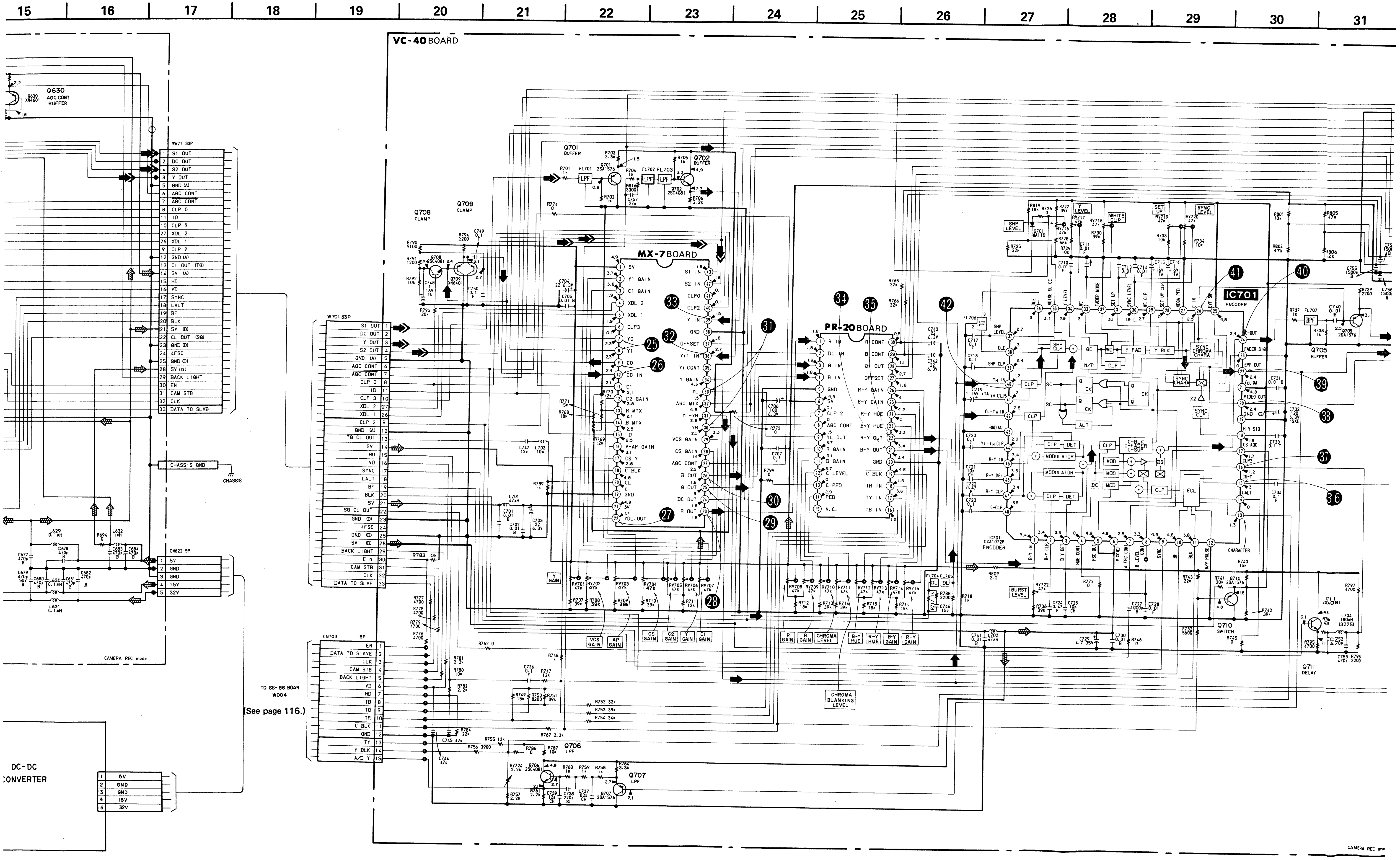
Fig. b Picture of TV monitor screen

- Signal path
  - ➡ : REC Y Signal
  - ➡ : REC CHROMA Signal
  - ⇛ : REC Y/CHROMA Signal



CN936 (WHT)
GRY SS 5V 1
GRY VIDEO 5V 2
GRY AUDIO 5V 3
GRY EVF 5V 4
GRY VTR POWER 5
GRY CAM POWER 6
GRY GND 7
GRY GND 8
TO VA-40 BOARD W361
(See page 108.)
CN935 (RED)
GRY UN REG 1
GRY UN REG GND 2
TO PA-13 BOARD W990
(See page 112.)
DC-DC CONVERTER
5V
GND
GND
15V
32V

CAMERA(1) CAMERA(1)


15
16
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26
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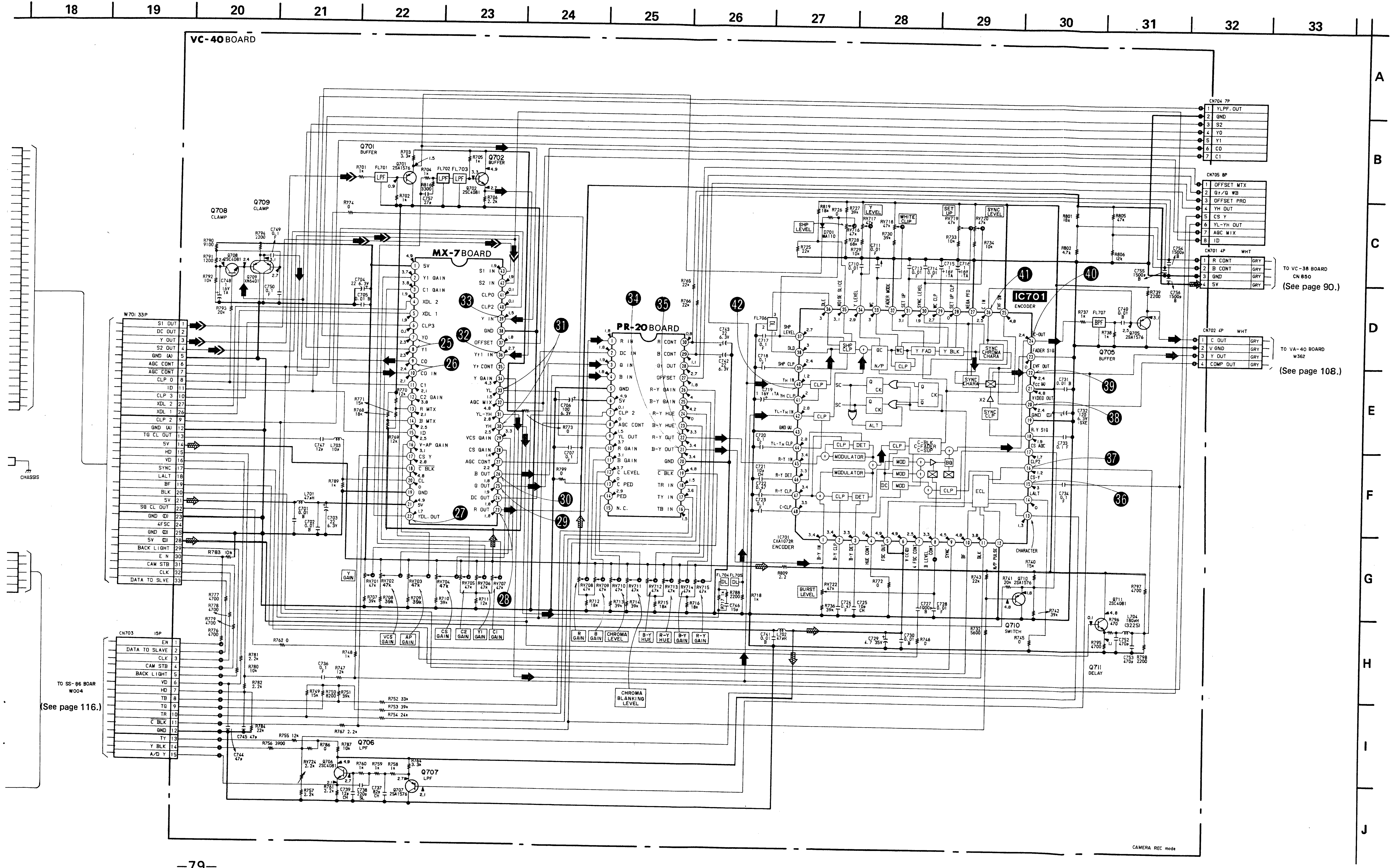
29
30
31
VC-40 BOARD
Q630 XN4601 AGC CONT BUFFER
W621 33P
1 S1 OUT
2 DC OUT
4 S2 OUT
3 Y OUT
5 GND (A)
6 AGC CONT
7 AGC CONT
8 CLP 0
11 ID
10 CLP 3
27 XDL 2
26 XDL 1
9 CLP 2
12 GND (A)
13 CL OUT (TG)
14 5V (A)
15 HD
16 VD
17 SYNC
18 LALT
19 BF
20 BLK
21 5V (D)
22 CL OUT (SG)
23 GND (D)
24 4FSC
25 GND (D)
28 5V (D)
29 BACK LIGHT
30 EN
31 CAM STB
32 CLK
33 DATA TO SLVB
CHASSIS GND
CHASSIS
CN622 5P
1 5V
2 GND
3 GND
4 15V
5 32V
CAMERA REC mode
DC-DC CONVERTER
1 5V
2 GND
3 GND
4 15V
5 32V
W701 33P
S1 OUT 1
DC OUT 2
Y OUT 3
S2 OUT 4
GND (A) 5
AGC CONT 6
AGC CONT 7
CLP 0 8
ID 11
CLP 3 10
XDL 2 27
XDL 1 26
CLP 2 9
GND (A) 12
TG CL OUT 13
5V 14
HD 15
VD 16
SYNC 17
LALT 18
BF 19
BLK 20
5V 21
SG CL OUT 22
GND (D) 23
4FSC 24
GND (D) 25
5V (D) 28
BACK LIGHT 29
E N 30
CAM STB 31
CLK 32
DATA TO SLVE 33
CN703 15P
EN 1
DATA TO SLAVE 2
CLK 3
CAM STB 4
BACK LIGHT 5
VD 6
HD 7
TB 8
TQ 9
TR 10
C BLK 11
GND 12
TY 13
Y BLK 14
A/D Y 15
TO SS-86 BOAR W004
(See page 116.)
Q708 CLAMP
Q709 CLAMP
Q701 BUFFER
Q702 BUFFER
MX-7 BOARD
1 5V
2 Y1 GAIN
3 C1 GAIN
4 XDL 2
5 XDL 1
6 CLP3
7 Y0
8 Y1
9 C0
10 C0 IN
11 C1
12 C2 GAIN
13 R MTX
14 B MTX
15 ID
16 V-AP GAIN
17 CS Y
18 C BLK
20 CL
19 GND
21 5V
22 YDL OUT
43 S1 IN
42 S2 IN
41 CLP0
40 CLP2
39 Y IN
38 GND
37 OFFSET
36 Yr1 IN
35 Y CONT
34 Y GAIN
33 YL
32 AGC MIX
31 YL-YH
30 YH
29 VCS GAIN
28 CS GAIN
27 AGC CONT
26 B OUT
25 G OUT
24 DC OUT
23 R OUT
Y GAIN
VCS GAIN
AP GAIN
CS GAIN
C2 GAIN
Y1 GAIN
C1 GAIN
Q706 LPF
Q707 LPF
PR-20 BOARD
1 R IN
2 DC IN
3 G IN
4 B IN
5 GND
6 5V
7 CLP 2
8 AGC CONT
9 YL OUT
10 R GAIN
11 B GAIN
12 C LEVEL
13 C PED
14 PED
15 N.C.
30 R CONT
29 B CONT
28 G1 OUT
27 OFFSET
26 R-Y GAIN
25 B-Y GAIN
24 R-Y HUE
23 B-Y HUE
22 R-Y OUT
21 B-Y OUT
20 GND
19 C BLK
18 TR IN
17 TY IN
16 TB IN
R GAIN
B GAIN
CHROMA LEVEL
B-Y HUE
R-Y HUE
B-Y GAIN
R-Y GAIN
CHROMA BLANKING LEVEL
SHP LEVEL
Y LEVEL
WHITE CLIP
SET UP
SYNC LEVEL
IC701 ENCODER
IC701 CXA1072R ENCODER
BURST LEVEL
CHARACTER
Q705 BUFFER
Q710 SWITCH
Q711 DELAY
CAMERA REC mo


18
19
20
21
22
23
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26
27
28
29
30
31
32
33
A
B
C
D
E
F
G
H
I
J
VC-40 BOARD
MX-7 BOARD
PR-20 BOARD
IC701
ENCODER
IC701
CXA1072R
ENCODER
Q701
BUFFER
Q702
BUFFER
Q708
CLAMP
Q709
CLAMP
Q705
BUFFER
Q706
LPF
Q707
LPF
Q710
SWITCH
Q711
DELAY
W701 33P
S1 OUT
DC OUT
Y OUT
S2 OUT
GND (A)
AGC CONT
AGC CONT
CLP 0
ID
CLP 3
XDL 2
XDL 1
CLP 2
GND (A)
TG CL OUT
5V
HD
VD
SYNC
LALT
BF
BLK
5V
SG CL OUT
GND (D)
4FSC
GND (D)
5V (D)
BACK LIGHT
E N
CAM STB
CLK
DATA TO SLVE
CHASSIS
CN703 15P
EN
DATA TO SLAVE
CLK
CAM STB
BACK LIGHT
VD
HD
TB
TG
TR
C BLK
GND
TY
Y BLK
A/D Y
TO SS-86 BOARD
W004
(See page 116.)
CN704 7P
YLPF. OUT
GND
S2
Y0
Y1
C0
C1
CN705 8P
OFFSET MTX
Gr/G WB
OFFSET PRO
YH OUT
CS Y
YL-YH OUT
AGC MIX
ID
CN701 4P WHT
R CONT
B CONT
GND
5V
TO VC-38 BOARD
CN 850
(See page 90.)
CN702 4P WHT
C OUT
V GND
Y OUT
COMP OUT
TO VA-40 BOARD
W362
(See page 108.)
Y GAIN
VCS GAIN
AP GAIN
CS GAIN
C2 GAIN
Y1 GAIN
C1 GAIN
R GAIN
B GAIN
CHROMA LEVEL
B-Y HUE
R-Y HUE
B-Y GAIN
R-Y GAIN
CHROMA BLANKING LEVEL
BURST LEVEL
SHP LEVEL
Y LEVEL
WHITE CLIP
SET UP
SYNC LEVEL
CHARACTER
CAMERA REC mode
㉗
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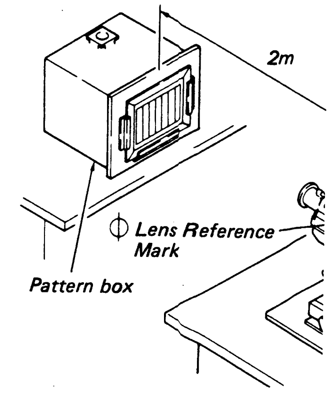
Note on Schematic Diagram:

- Voltage and waveform measuring conc
  (1) Sample object: Pattern box col
  (2) Voltage values: Between meas
  ground, measur
  multimeter (in
  or more).

1. Connection


2m
Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the output waveform of Fig. a and t can be obtain.

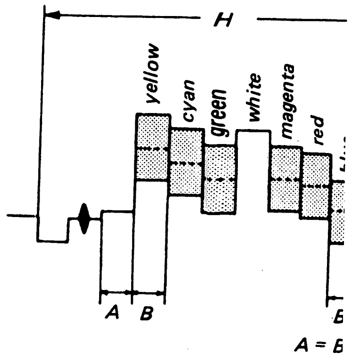

H
yellow
cyan
green
white
magenta
red
A
B
A = B

Fig. a Camera output wav

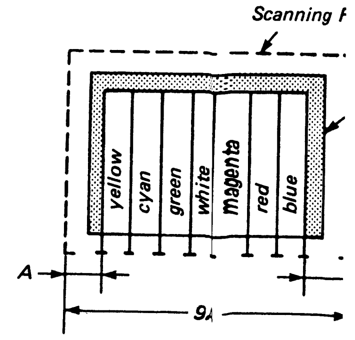

Scanning
yellow
cyan
green
white
magenta
red
blue
A
9A

Fig. b Picture of TV monito

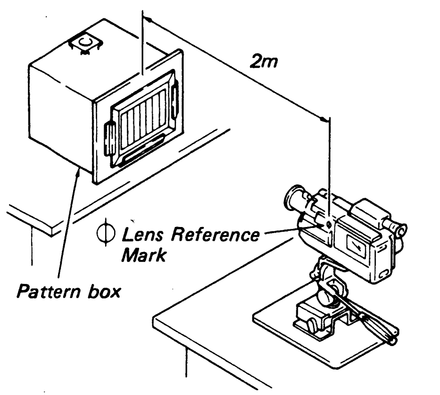
4-3. VC-38 (AUTO WHITE BALANCE) PRINTED WIRING BOARD

– Ref. No. VC-38 BOARD: 1,000 series –

Note on Schematic Diagram:

- Voltage and waveform measuring conditions:
  - (1) Sample object: Pattern box color bars.
  - (2) Voltage values: Between measurement point and ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection


2m
Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

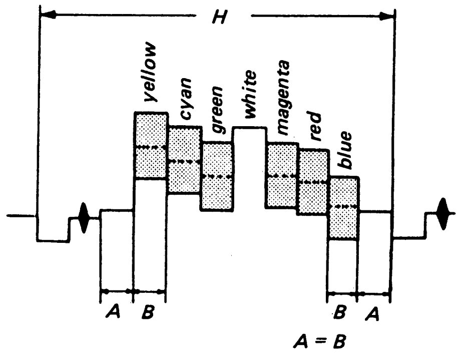

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

Fig. a Camera output waveform

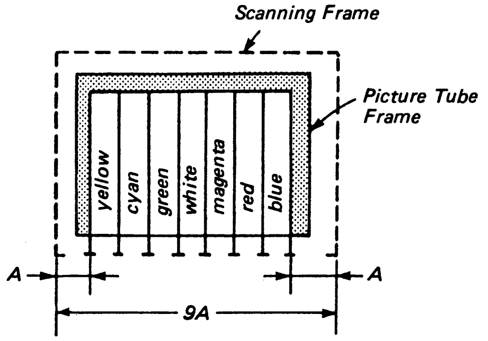

Scanning Frame
Picture Tube Frame
yellow
cyan
green
white
magenta
red
blue
A
A
9A

Fig. b Picture of TV monitor screen

VC-38 BOARD

CN600	F·4
CN601	F·3
CN850	F·2
CN851	F·3
D600	I·4
D601	D·4
D850	C·2
IC850	I·2
IC851	I·2
IC852	H·2
IC853	I·2
Q600	G·4
Q601	I·4
Q602	I·4
Q850	G·1
Q851	G·1
Q852	H·1
Q855	G·2
Q856	G·2
Q868	G·1
Q869	H·1
RV600	I·4
RV850	H·1

Note on Printed Wiring Board:

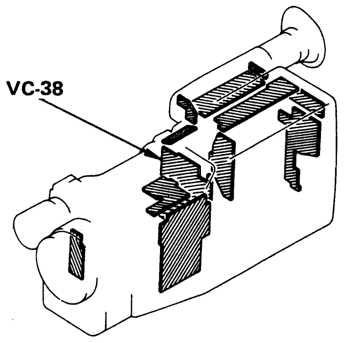
- ⊗ : Through hole.
- ▒ : Pattern of the rear side.

Caution:

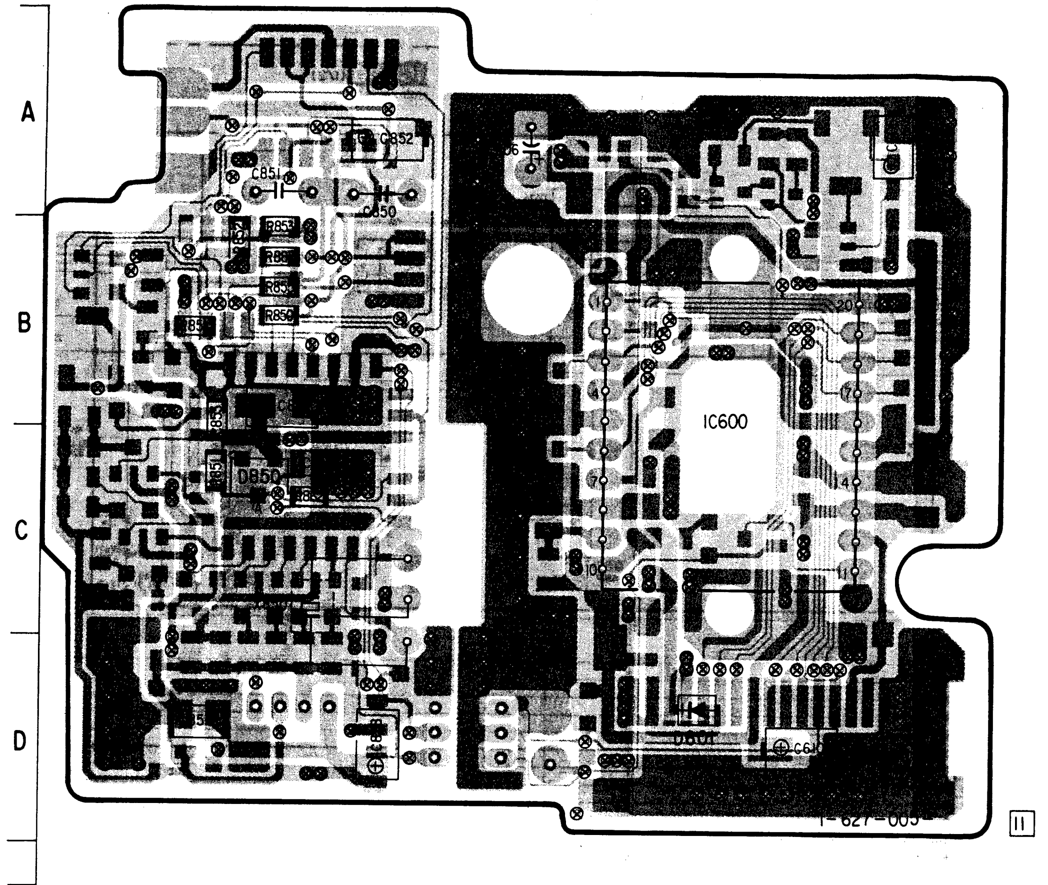
Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

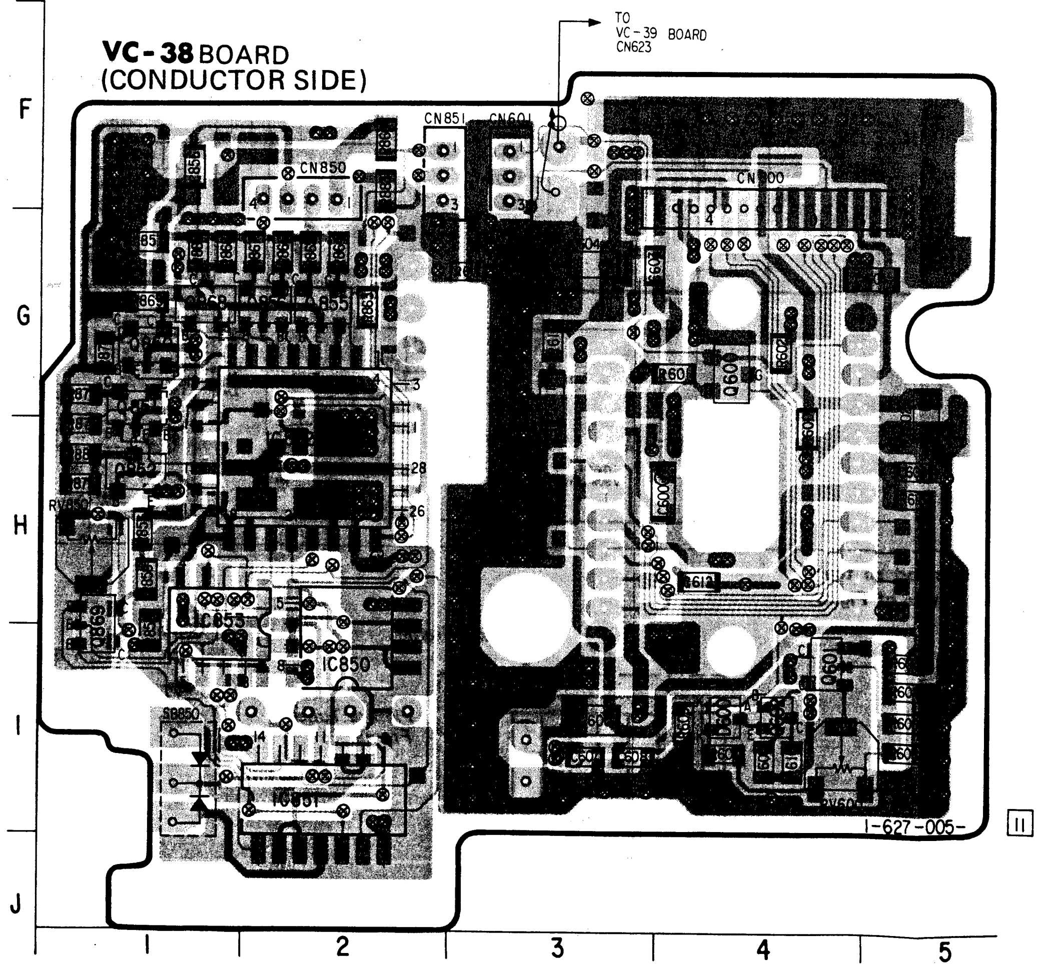
- Digital transistor (VC-38: Q850, Q851, Q852, Q855, Q856, Q868, Q869) is transistor with resistor.
  Refer to the VC-38 board schematic diagram for digital transistor.



VC-38 BOARD (COMPONENT SIDE)


A
B
C
D
C852
C851
C850
R853
IC600
Q850
1-627-005

VC-38 BOARD (CONDUCTOR SIDE)


TO VC-39 BOARD CN623
CN851
CN601
CN850
CN600
F
G
H
I
J
RV850
IC855
IC850
1-627-005
1
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4
5

AF BLOCK UNIT

AF BOARD

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be

4-3. VC-38 (AUTO WHITE BALANCE) PRINTED WIRING BOARD

– Ref. No. VC-38 BOARD: 1,000 series –

VC-38 BOARD

CN600	F·4
CN601	F·3
CN850	F·2
CN851	F·3
D600	I·4
D601	D·4
D850	C·2
IC850	I·2
IC851	I·2
IC852	H·2
IC853	I·2
Q600	G·4
Q601	I·4
Q602	I·4
Q850	G·1
Q851	G·1
Q852	H·1
Q855	G·2
Q856	G·2
Q868	G·1
Q869	H·1
RV600	I·4
RV850	H·1

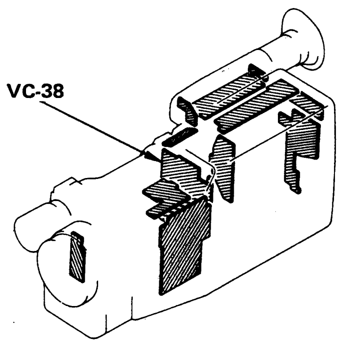
Note on Printed Wiring Board:

- ⊗ : Through hole.
- ▒ : Pattern of the rear side.

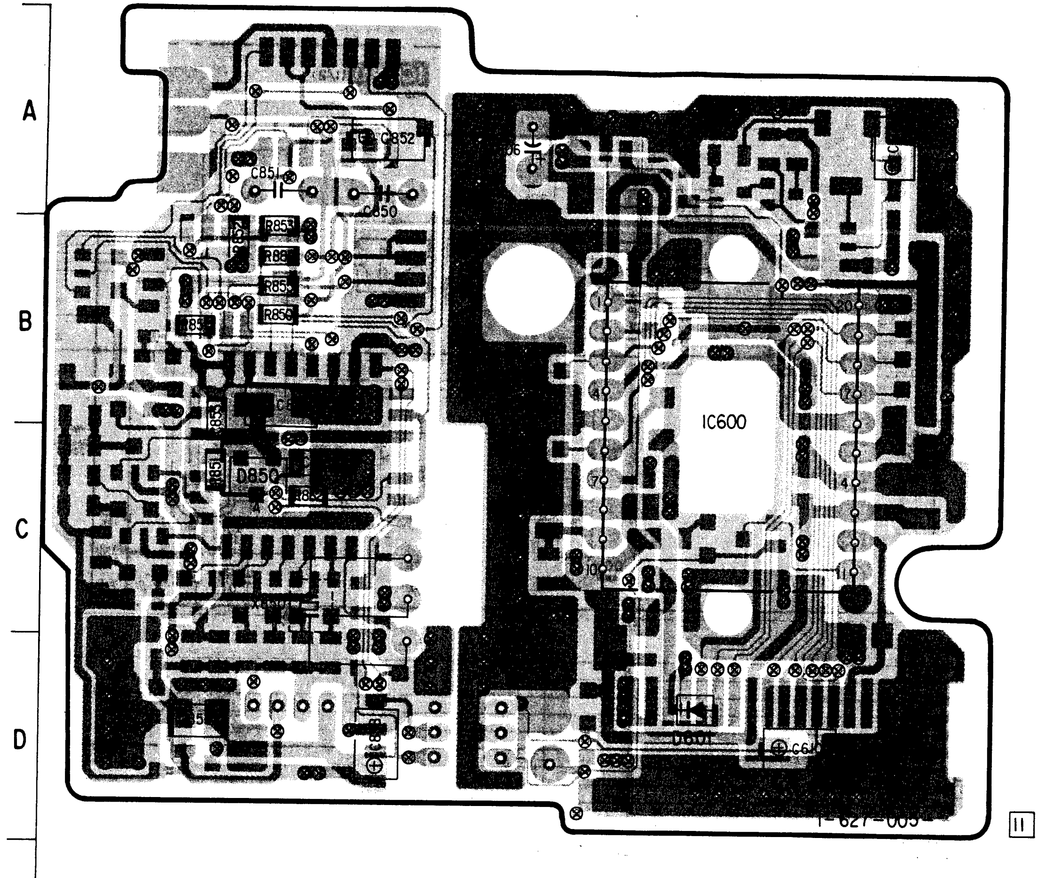
Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

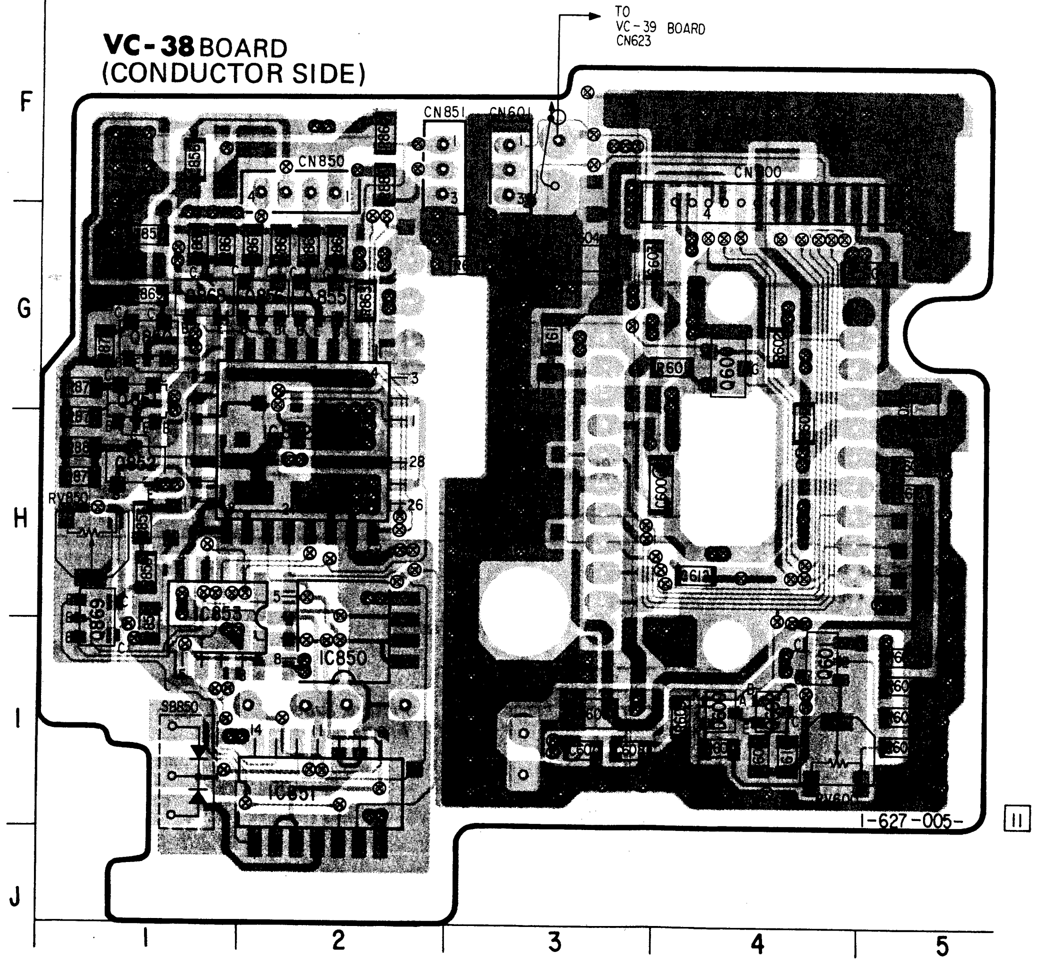
- Digital transistor (VC-38: Q850, Q851, Q852, Q855, Q856, Q868, Q869) is transistor with resistor. Refer to the VC-38 board schematic diagram for digital transistor.

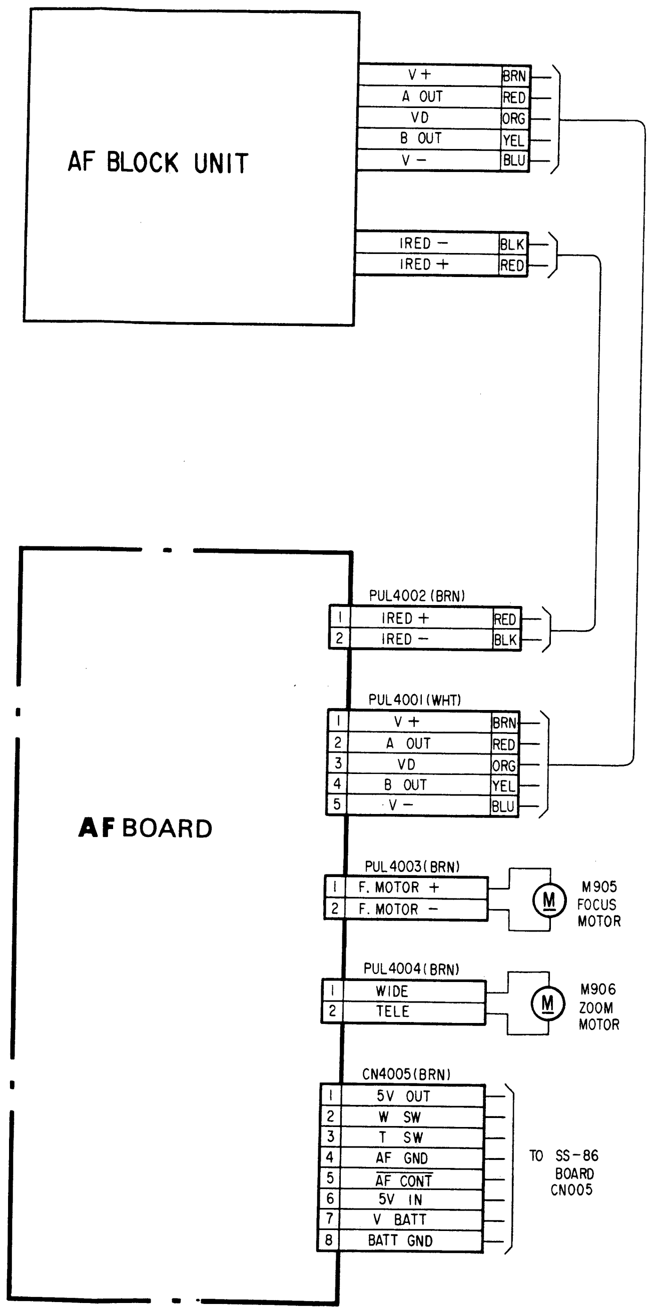


VC-38 BOARD (COMPONENT SIDE)


A
B
C
D
IC600
C851
C850
C852
R855
R856
D850
D601
1-627-005-
11

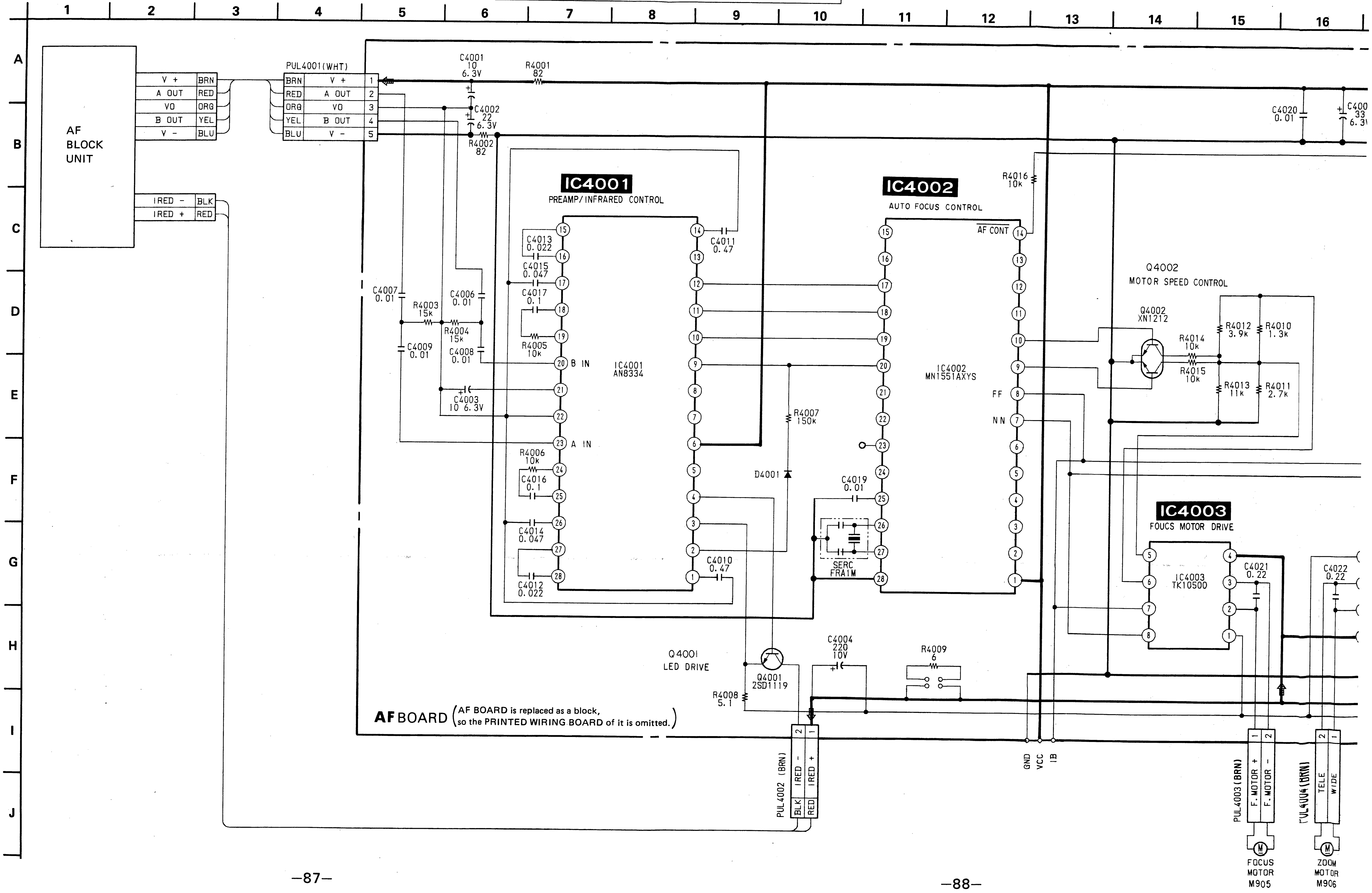
VC-38 BOARD (CONDUCTOR SIDE)

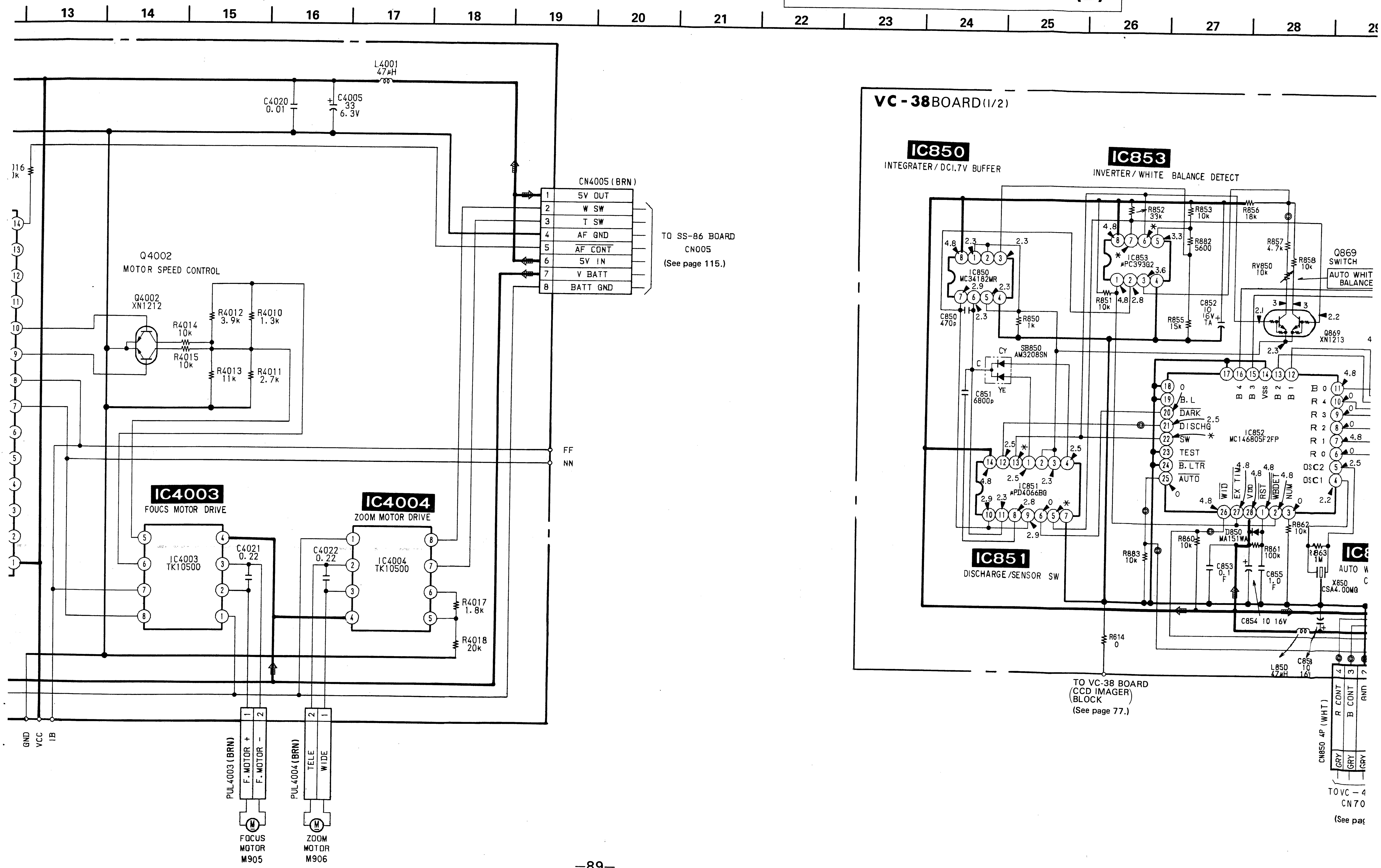

TO VC-39 BOARD CN623
CN851
CN601
CN850
CN600
F
G
H
I
J
IC853
IC850
IC851
RV600
RV850
Q600
1-627-005-
11
1
2
3
4
5

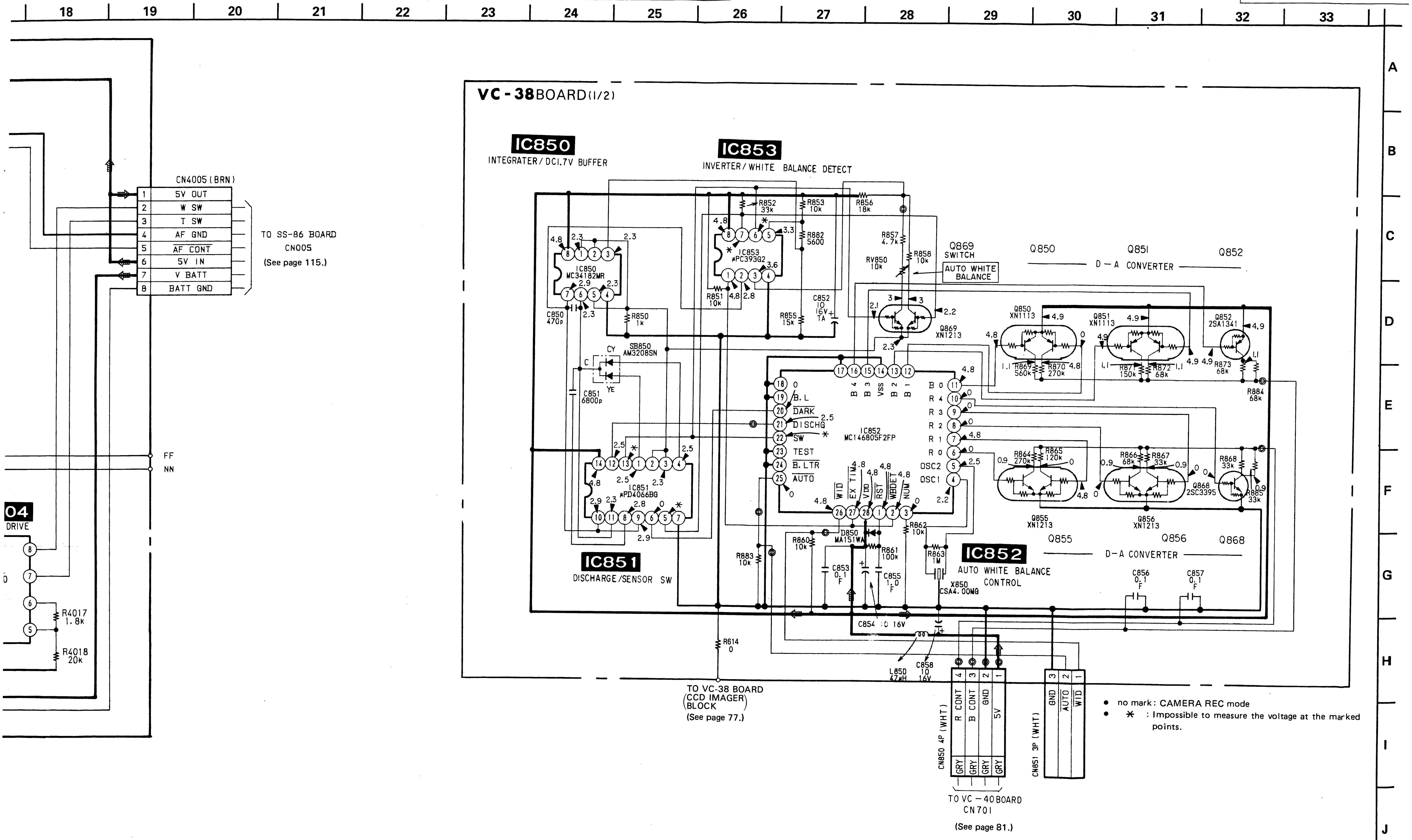

AF BLOCK UNIT
V+
A OUT
VD
B OUT
V−
BRN
RED
ORG
YEL
BLU
IRED −
IRED +
BLK
RED
AF BOARD
PUL4002 (BRN)
1 IRED +
2 IRED −
RED
BLK
PUL4001 (WHT)
1 V+
2 A OUT
3 VD
4 B OUT
5 V−
BRN
RED
ORG
YEL
BLU
PUL4003 (BRN)
1 F. MOTOR +
2 F. MOTOR −
M
M905 FOCUS MOTOR
PUL4004 (BRN)
1 WIDE
2 TELE
M
M906 ZOOM MOTOR
CN4005 (BRN)
1 5V OUT
2 W SW
3 T SW
4 AF GND
5 $\overline{\text{AF CONT}}$
6 5V IN
7 V BATT
8 BATT GND
TO SS-86 BOARD CN005

VC-38 (AUTO WHITE BALANCE) SCHEMATIC DIAGRAM

– Ref. No. VC-38 BOARD: 1,000 series –


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
AF BLOCK UNIT
V + BRN
A OUT RED
VO ORG
B OUT YEL
V – BLU
IRED – BLK
IRED + RED
PUL4001(WHT)
C4001 10 6.3V
R4001 82
C4002 22 6.3V
R4002 82
IC4001
PREAMP/INFRARED CONTROL
IC4001 AN8334
B IN
A IN
C4013 0.022
C4015 0.047
C4017 0.1
R4005 10k
R4006 10k
C4016 0.1
C4014 0.047
C4012 0.022
C4011 0.47
C4010 0.47
C4007 0.01
R4003 15k
R4004 15k
C4006 0.01
C4008 0.01
C4009 0.01
C4003 10 6.3V
R4007 150k
D4001
IC4002
AUTO FOCUS CONTROL
IC4002 MN1551AXYS
AF CONT
FF
NN
R4016 10k
C4019 0.01
SERC FRA1M
C4020 0.01
C400 33 6.3V
Q4002
MOTOR SPEED CONTROL
Q4002 XN1212
R4014 10k
R4015 10k
R4012 3.9k
R4010 1.3k
R4013 11k
R4011 2.7k
IC4003
FOUCS MOTOR DRIVE
IC4003 TK10500
C4021 0.22
C4022 0.22
Q4001
LED DRIVE
Q4001 2SD1119
R4008 5.1
C4004 220 10V
R4009 6
AF BOARD (AF BOARD is replaced as a block, so the PRINTED WIRING BOARD of it is omitted.)
PUL4002 (BRN)
BLK IRED –
RED IRED +
GND
VCC
IB
PUL4003 (BRN)
F. MOTOR +
F. MOTOR –
PUL4004 (BRN)
TELE
WIDE
FOCUS MOTOR M905
ZOOM MOTOR M906


13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
L4001
47μH
C4020
0.01
C4005
33
6.3V
CN4005 (BRN)
1 5V OUT
2 W SW
3 T SW
4 AF GND
5 AF CONT
6 5V IN
7 V BATT
8 BATT GND
TO SS-86 BOARD
CN005
(See page 115.)
Q4002
MOTOR SPEED CONTROL
Q4002
XN1212
R4014
10k
R4015
10k
R4012
3.9k
R4010
1.3k
R4013
11k
R4011
2.7k
FF
NN
IC4003
FOUCS MOTOR DRIVE
IC4003
TK10500
C4021
0.22
IC4004
ZOOM MOTOR DRIVE
IC4004
TK10500
C4022
0.22
R4017
1.8k
R4018
20k
GND
VCC
IB
PUL4003 (BRN)
F. MOTOR +
F. MOTOR −
PUL4004 (BRN)
TELE
WIDE
FOCUS
MOTOR
M905
ZOOM
MOTOR
M906
VC-38 BOARD (1/2)
IC850
INTEGRATER/DC1.7V BUFFER
IC850
MC34182MR
C850
470p
R850
1k
IC853
INVERTER/WHITE BALANCE DETECT
IC853
μPC393G2
R852
33k
R853
10k
R882
5600
R851
10k
C852
10
16V
TA
R855
15k
R856
18k
R857
4.7k
R858
10k
RV850
10k
Q869
SWITCH
AUTO WHITE BALANCE
Q869
XN1213
SB850
AM3208SN
CY
C
YE
C851
6800p
IC852
MC146805F2FP
B.L
DARK
DISCHG
SW
TEST
B.LTR
AUTO
WID
EX TIM
VDD
RST
WBDET
NUM
B 4
B 3
VSS
B 2
B 1
B 0
R 4
R 3
R 2
R 1
R 0
OSC2
OSC1
IC851
μPD4066BG
IC851
DISCHARGE/SENSOR SW
D850
MA151WA
R860
10k
R861
100k
R862
10k
R863
1M
R883
10k
C853
0.1
F
C855
1.0
F
C854 10 16V
X850
CSA4.00MG
R614
0
L850
47μH
C856
10
16V
TO VC-38 BOARD
(CCD IMAGER)
BLOCK
(See page 77.)
CN850 4P (WHT)
R CONT
B CONT
GND
GRY
TO VC-4
CN70
(See pag


18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
A
B
C
D
E
F
G
H
I
J
VC-38BOARD(1/2)
IC850
INTEGRATER/DC1.7V BUFFER
IC853
INVERTER/WHITE BALANCE DETECT
IC851
DISCHARGE/SENSOR SW
IC852
AUTO WHITE BALANCE CONTROL
IC850 MC34182MR
IC853 μPC393G2
IC851 μPD4066BG
IC852 MC146805F2FP
CN4005 (BRN)
1 5V OUT
2 W SW
3 T SW
4 AF GND
5 AF CONT
6 5V IN
7 V BATT
8 BATT GND
TO SS-86 BOARD CN005
(See page 115.)
Q869 SWITCH
AUTO WHITE BALANCE
Q850
Q851
Q852
D-A CONVERTER
Q855
Q856
Q868
D-A CONVERTER
Q850 XN1113
Q851 XN1113
Q852 2SA1341
Q869 XN1213
Q855 XN1213
Q856 XN1213
Q868 2SC3395
SB850 AM3208SN
D850 MA151WA
X850 CSA4.00MG
L850 47μH
B.L
DARK
DISCHG
SW
TEST
B.LTR
AUTO
WID
EX TIM
VDD
RST
WBDET
NUM
B0
R4
R3
R2
R1
R0
OSC2
OSC1
FF
NN
04
DRIVE
R4017 1.8k
R4018 20k
R614 0
TO VC-38 BOARD (CCD IMAGER BLOCK)
(See page 77.)
CN850 4P (WHT)
R CONT
B CONT
GND
5V
GRY
CN851 3P (WHT)
GND
AUTO
WID
TO VC-40 BOARD CN701
(See page 81.)

- no mark : CAMERA REC mode
- ＊ : Impossible to measure the voltage at the marked points.

4-4. SS-86 (DIGITAL TITLER) PRINTED WIRING BOARD

– Ref. No. SS-86 BOARD: 2,000 series –

Note:

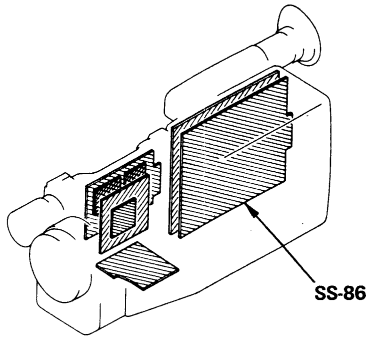
- ⊗ : Through hole.
- ▨ : Pattern of the rear side.

Caution:

Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

- Digital transistor (SS-86: Q203, Q204, Q205, Q206) is transistor with resistor.
  Refer to the SS-86 board schematic diagram for digital transistor.

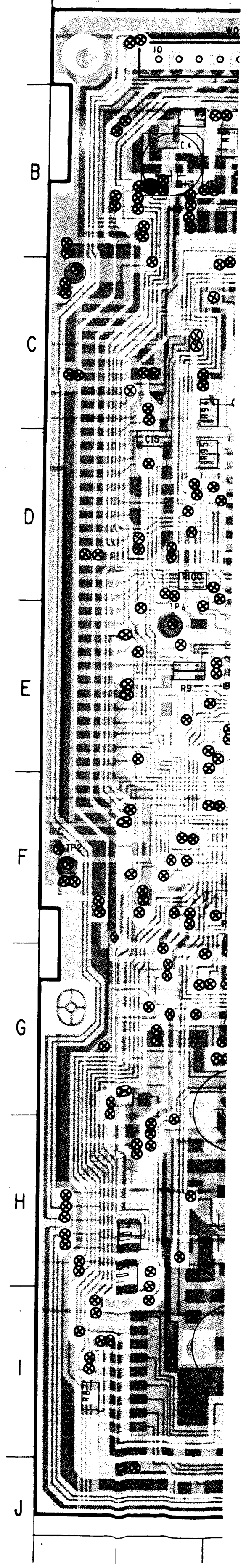


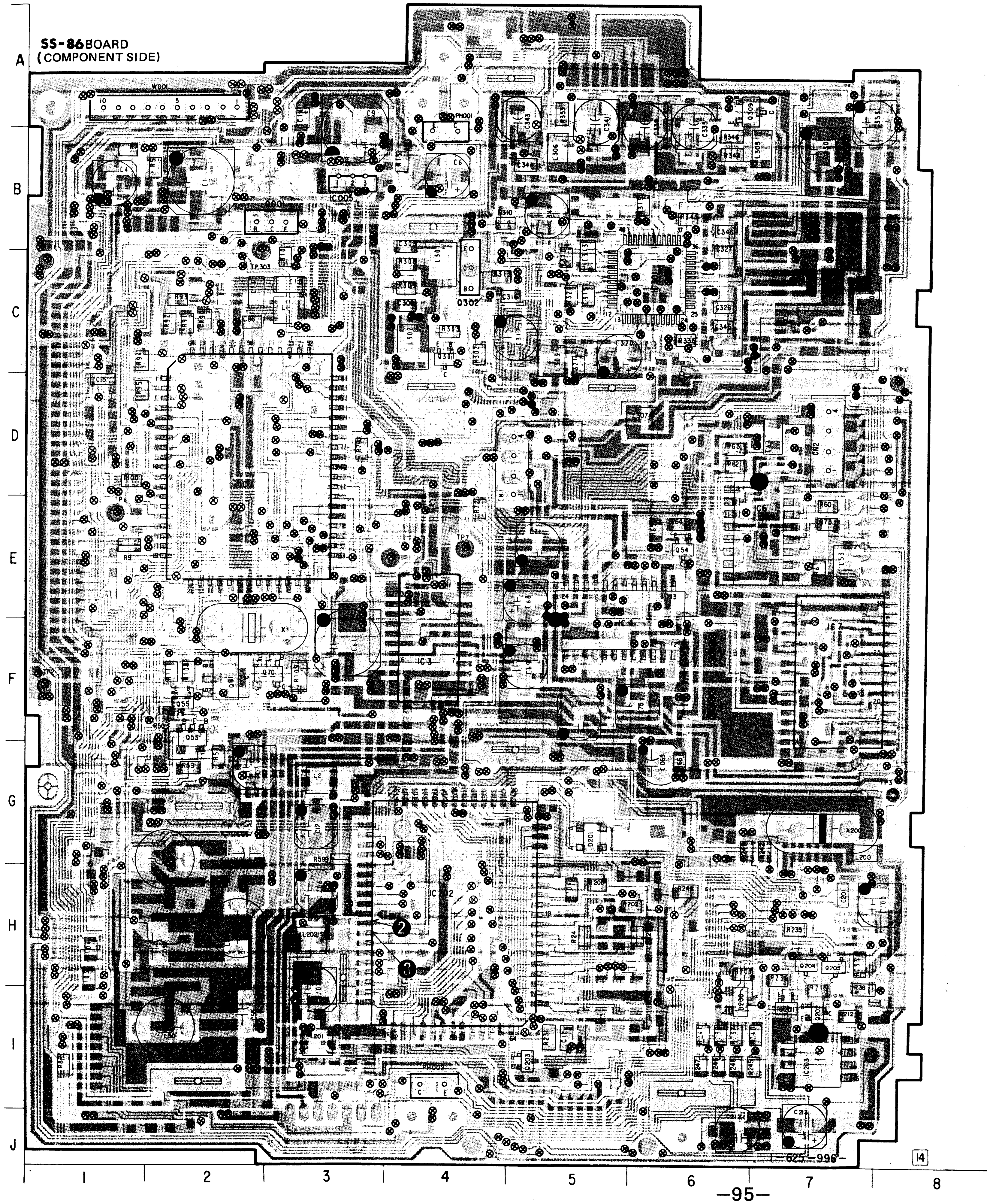
CN001	D·5
CN002	D·7
CN003	C·1 0
CN004	A·1 1
CN005	I-13
CN006	B·1 4
CN007	H·16
CT200	G-12
D003	E-15
D004	E-15
D050	I-15
D051	H-15
D200	I-6
D201	G-5
D203	G-11
IC001	D·2
IC002	B·15
IC003	F·4
IC004	F·5
IC005	B·3
IC006	E·6
IC007	F·7
IC200	H·10
IC201	H·12
IC202	H-4
IC203	I·7
IC301	C·6
Q001	B·2
Q002	B-15
Q005	B·13
Q006	G-15
Q007	E·10
Q008	G·14
Q051	H·15
Q052	H·15
Q053	F-2
Q054	E·6
Q055	F·2
Q070	F·2
Q071	F·15
Q073	F·15

Q074	F·15
Q076	F·14
Q078	F·14
Q079	F·15
Q080	F·14
Q081	F·2
Q201	I-7
Q202	I·7
Q203	I·5
Q204	H·7
Q205	H·7
Q206	G-11
Q301	C-4
Q302	C·4
Q303	C·13
Q304	B-11
Q306	C·11
Q307	C·11
Q308	A-10
Q309	A-6
Q310	A-11
Q311	A-12
Q312	A-12
Q313	B-12
Q314	B-12
Q315	B-12
Q316	A-12
Q317	C-11
Q318	C-11
Q319	D-14
Q321	E-15
RV001	C·14
RV002	D·15
RV003	C·15
RV200	I·9
RV301	A·9
RV302	B·9
RV306	A-12
TP001	C·1
TP002	F·1
TP003	G-8
TP004	D·7
TP005	G·7
TP006	E·1
TP007	E·4
TP008	E·3
TP303	C-23

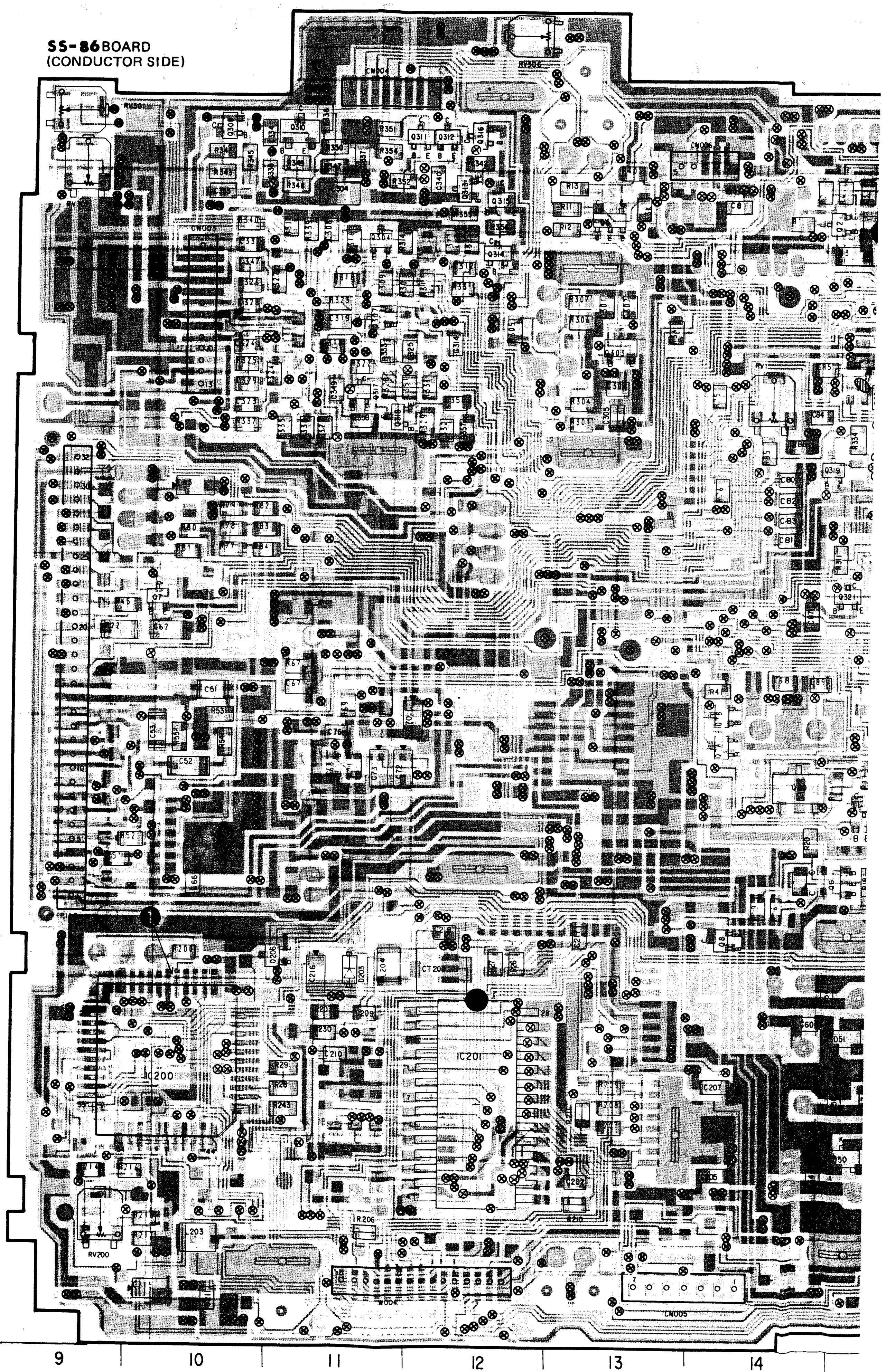
92 ~ 93

SS-86 BOARD
(COMPONENT SIDE)



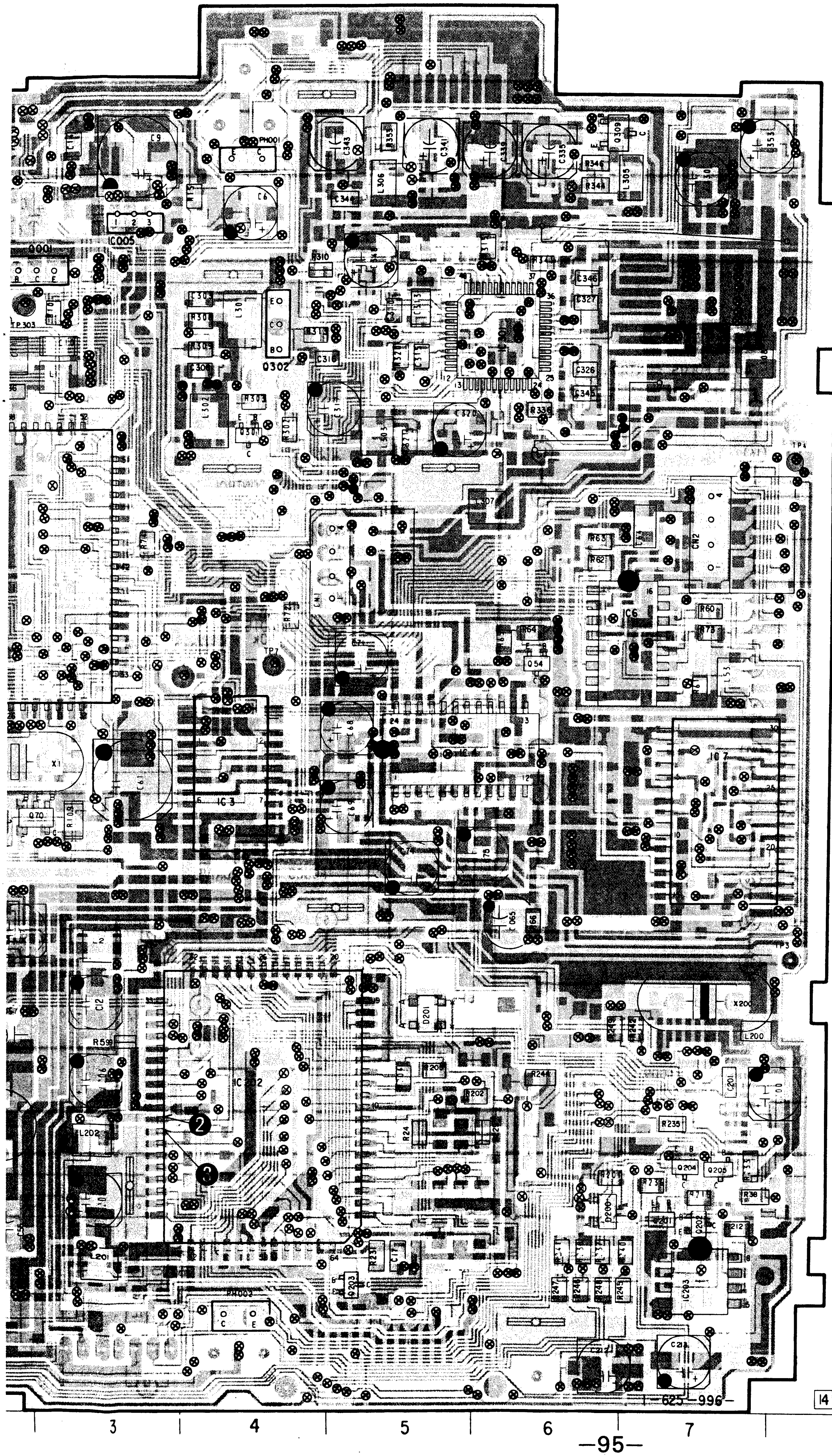

SS-86 BOARD
(COMPONENT SIDE)

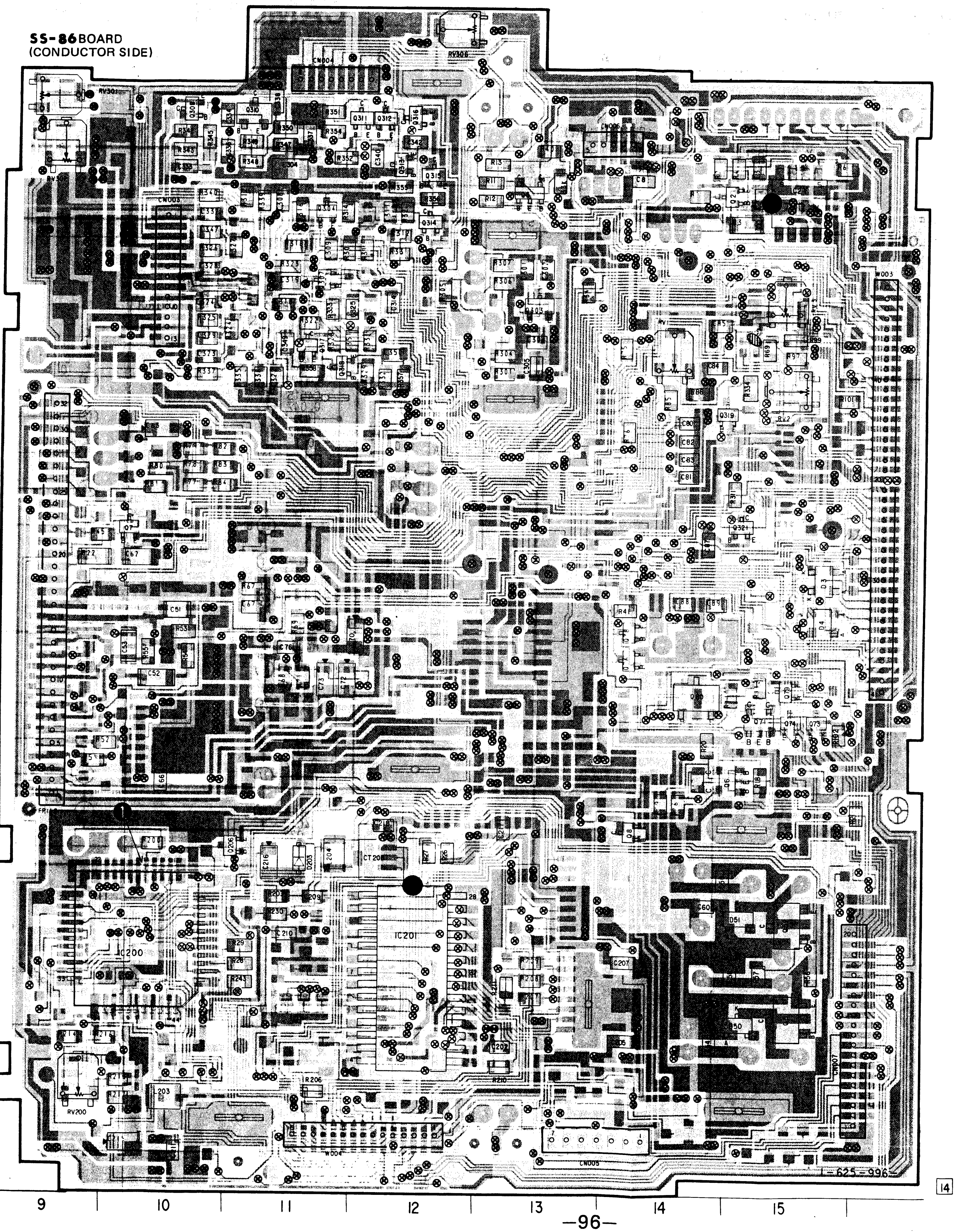
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
IC005
IC 3
IC 6
IC 7
IC 202
IC 203
X1
X200
PH001
PH002
W001
625-996
14


SS-86 BOARD
(CONDUCTOR SIDE)

9
10
11
12
13
14
IC200
IC201
CN003
CN004
CN005
RV200
RV301
W004

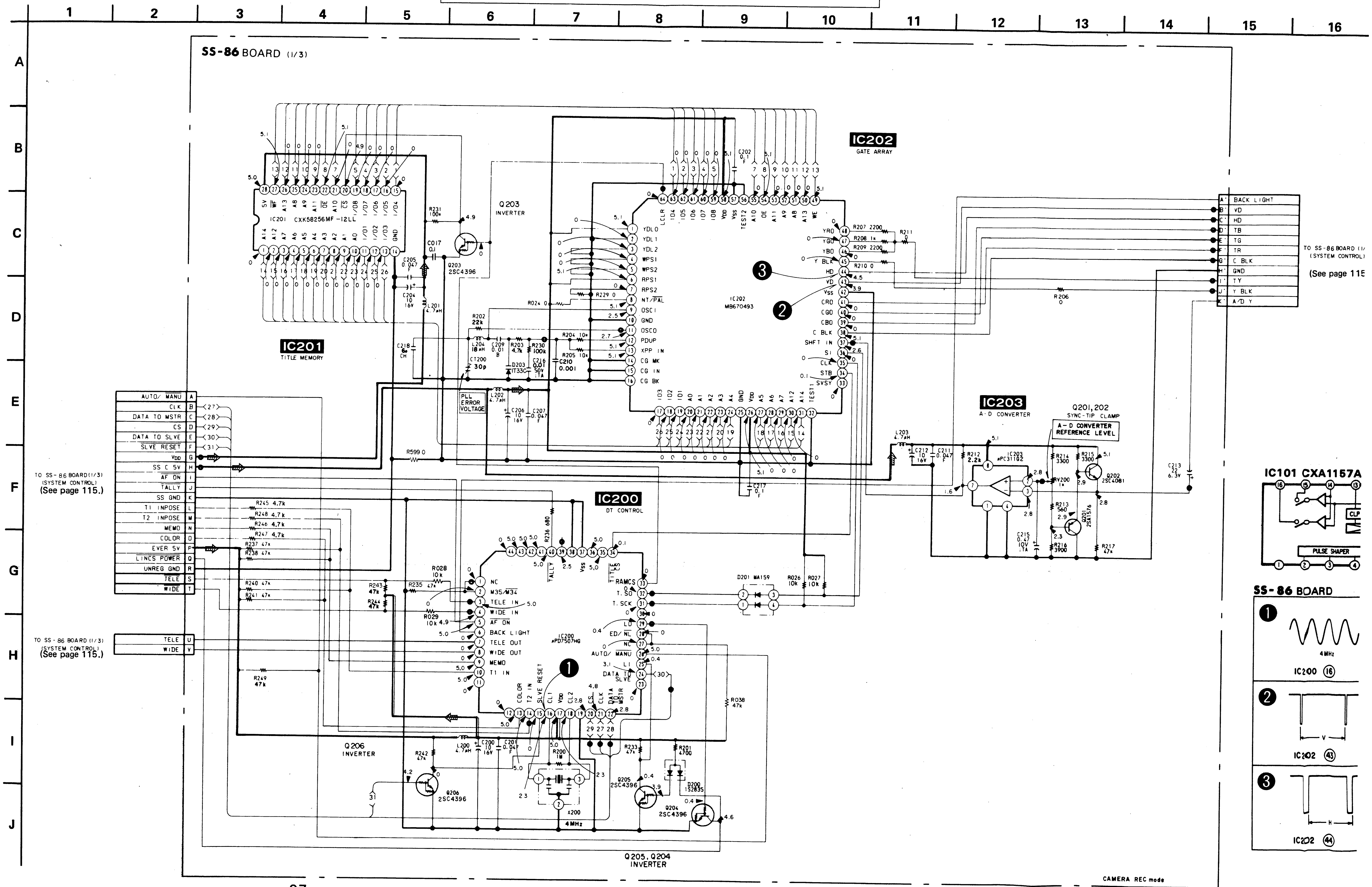
SS-86 BOARD
(CONDUCTOR SIDE)


IC3
IC6
IC7
IC202
IC203
X1
X200
CN1
CN2
L200
L202
PH001
Q302
1-625-996-
14
3
4
5
6
7
8

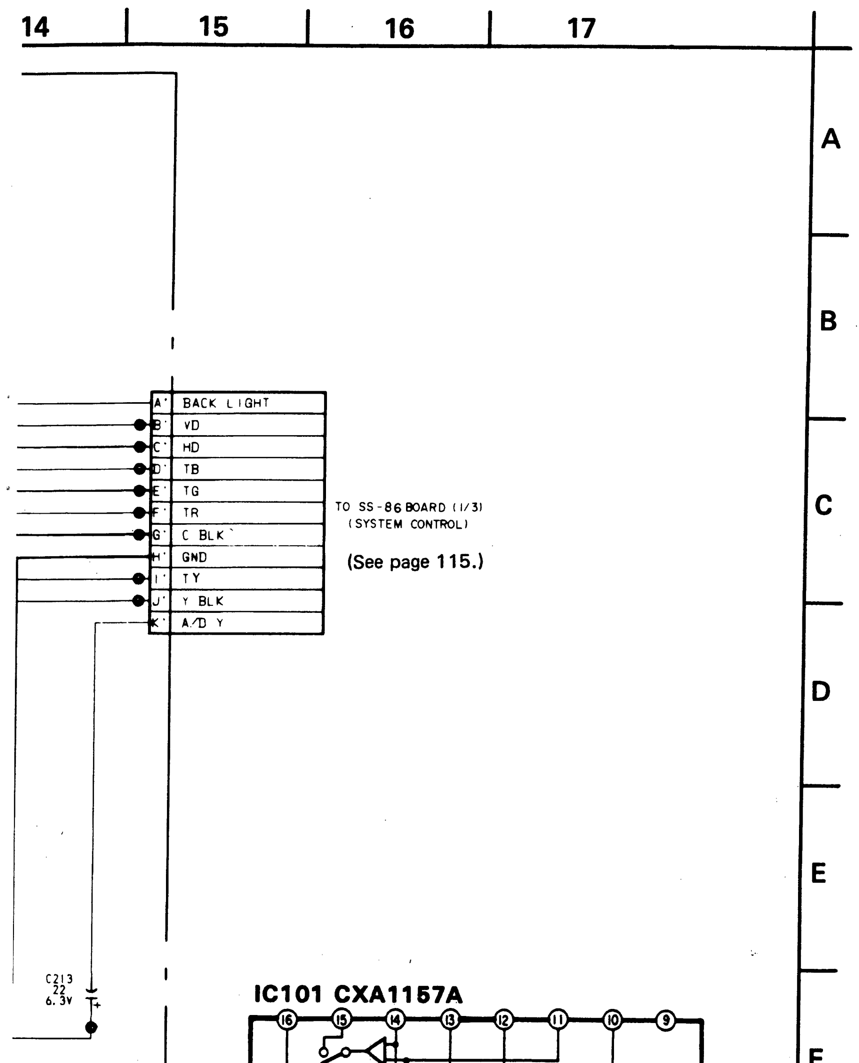

CN003
CN004
CN005
RV301
RV305
RV200
IC200
IC201
W003
W004
CT201
1-625-996-
14
9
10
11
12
13
14
15

SS-86 (DIGITAL TITLER) SCHEMATIC DIAGRAM
– Ref. No. SS-86 BOARD: 2,000 series –

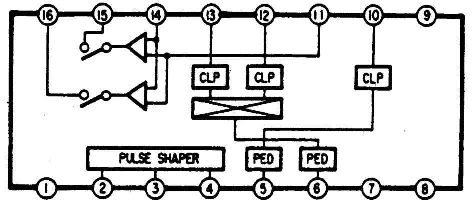
DIGITAL TITLER DIGITAL TITLER


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
SS-86 BOARD (1/3)
IC201
TITLE MEMORY
IC201 CXK58256MF-12LL
IC202
GATE ARRAY
IC202 MB670493
IC203
A-D CONVERTER
IC203 μPC3116Z
IC200
DT CONTROL
IC200 μPD7507HG
Q203 INVERTER
Q203 2SC4396
Q201,202 SYNC-TIP CLAMP
A-D CONVERTER REFERENCE LEVEL
Q202 2SC4081
Q201 2SA1576
Q206 INVERTER
Q206 2SC4396
Q205, Q204 INVERTER
Q205 2SC4396
Q204 2SC4396
D201 MA159
D200 1S2835
D203 IT33C
X200 4MHz
PLL ERROR VOLTAGE
AUTO/MANU
CLK
DATA TO MSTR
CS
DATA TO SLVE
SLVE RESET
VDD
SS C 5V
AF ON
TALLY
SS GND
T1 INPOSE
T2 INPOSE
MEMO
COLOR
EVER 5V
LINCS POWER
UNREG GND
TELE
WIDE
TO SS-86 BOARD (1/3) (SYSTEM CONTROL) (See page 115.)
TO SS-86 BOARD (1/3) (SYSTEM CONTROL) (See page 115.)
BACK LIGHT
VD
HD
TB
TG
TR
C BLK
GND
TY
Y BLK
A/D Y
TO SS-86 BOARD (1/ (SYSTEM CONTROL)
(See page 115
YDL0
YDL1
YDL2
WPS1
WPS2
RPS1
RPS2
NT/PAL
OSCI
GND
OSCO
PDUP
XPP IN
CG MK
CG IN
CG BK
YRO
YGO
YBO
Y BLK
HD
VD
VSS
CRO
CGO
CBO
C BLK
SHFT IN
SI
CLK
STB
SYSY
NC
M35/M34
TELE IN
WIDE IN
AF ON
BACK LIGHT
TELE OUT
WIDE OUT
MEMO
T1 IN
RAMCS
T. SO
T. SCK
LD
ED/NL
NC
AUTO/MANU
L1
DATA TO SLVE
DATA TO MSTR
IC101 CXA1157A
PULSE SHAPER
CLP
SS-86 BOARD
❶
4MHz
IC200 ⑯
❷
V
IC202 ㊸
❸
H
IC202 ㊹
CAMERA REC mode

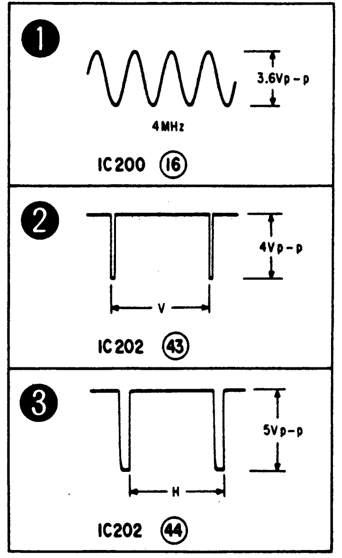
DIGITAL TITLER VIDEO, AUDIO


14
15
16
17
A
B
C
D
E
A' BACK LIGHT
B' VD
C' HD
D' TB
E' TG
F' TR
G' C BLK
H' GND
I' TY
J' Y BLK
K' A/D Y
TO SS-86 BOARD (1/3)
(SYSTEM CONTROL)
(See page 115.)
C213
22
6.3V

IC101 CXA1157A


16
15
14
13
12
11
10
9
CLP
CLP
CLP
PULSE SHAPER
PED
PED
1
2
3
4
5
6
7
8

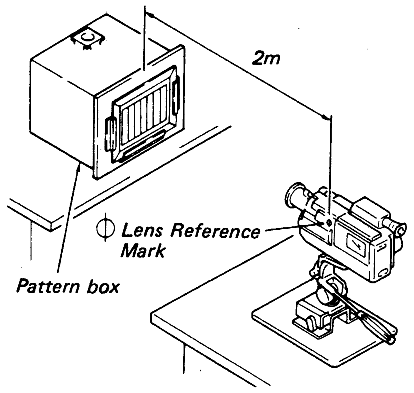
SS-86 BOARD



Note:

- Voltage and waveform measuring conditions:
  (1) Sample object: Pattern box color bars.
  (2) Voltage values: Between measurement point and ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection


2m
Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

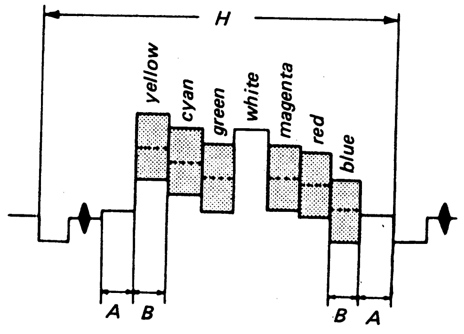

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

Fig. a Camera output waveform

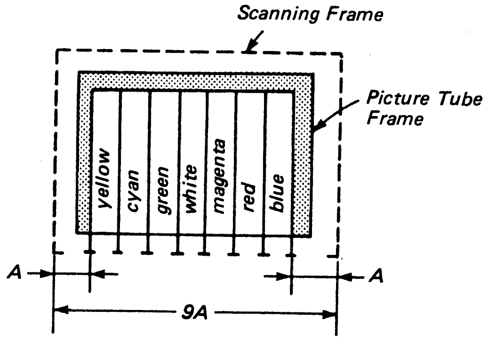
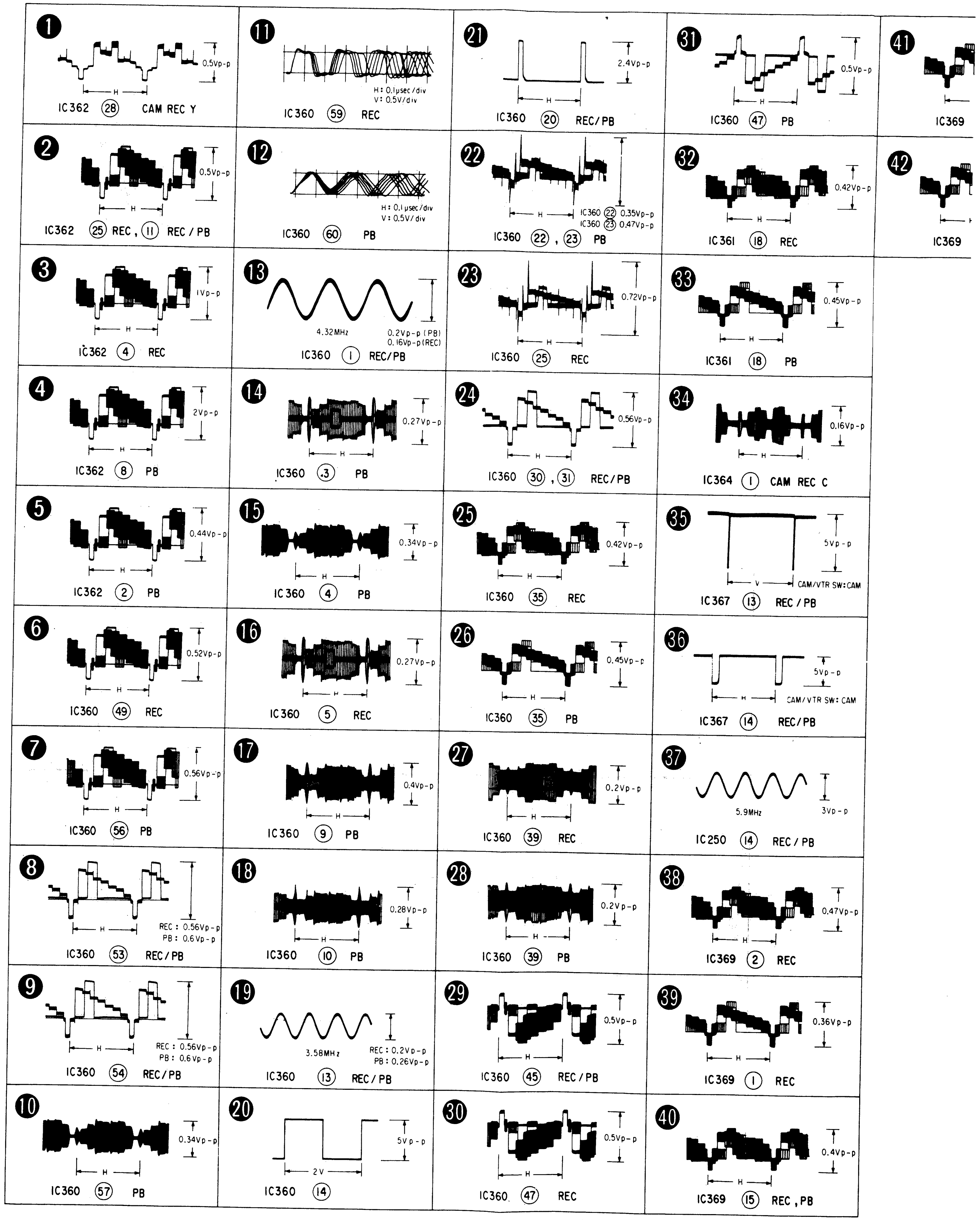
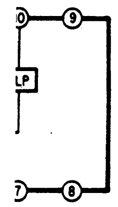

Scanning Frame
Picture Tube Frame
yellow
cyan
green
white
magenta
red
blue
A
A
9A

Fig. b Picture of TV monitor screen

VA-40 BOARD

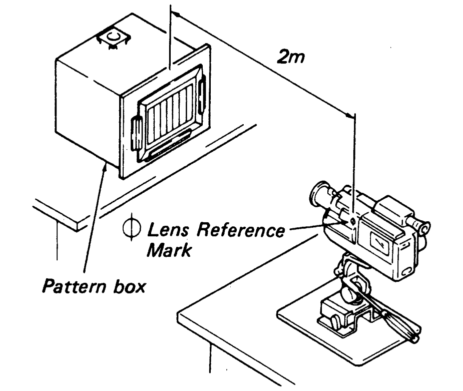




Note:

- Voltage and waveform measuring conditions:
  - (1) Sample object: Pattern box color bars.
  - (2) Voltage values: Between measurement point and ground, measured with a DC digital multimeter (impedance 10M-ohm or more).

1. Connection


2m
Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

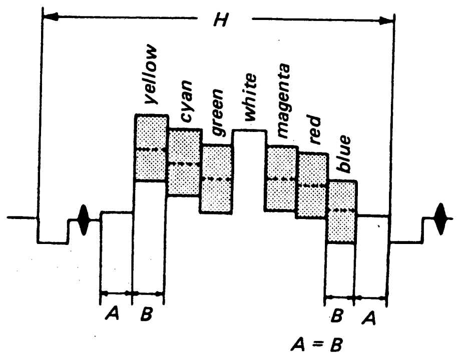

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

Fig. a Camera output waveform

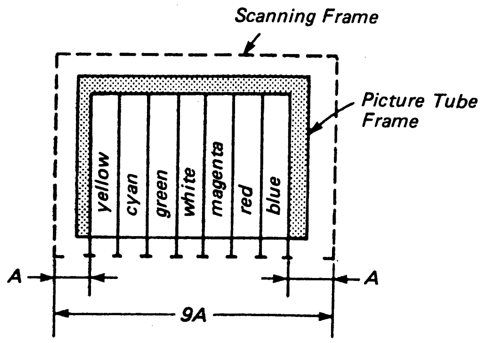
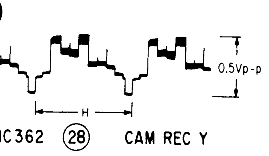
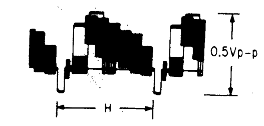

Scanning Frame
Picture Tube Frame
yellow
cyan
green
white
magenta
red
blue
A
9A
A

Fig. b Picture of TV monitor screen

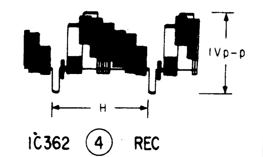
VA-40 BOARD

①


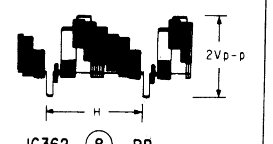
IC362 ㉘ CAM REC Y

②


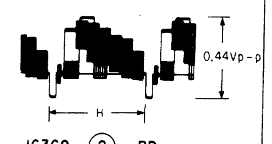
IC362 ㉕ REC, ⑪ REC / PB

③


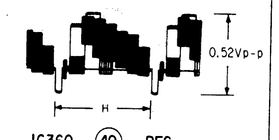
IC362 ④ REC

④


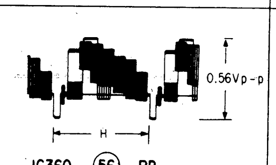
IC362 ⑧ PB

⑤


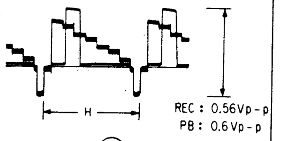
IC362 ② PB

⑥


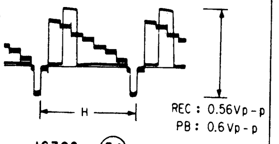
IC360 ㊾ REC

⑦


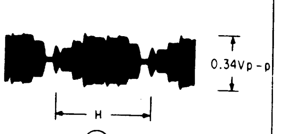
IC360 (56) PB

⑧


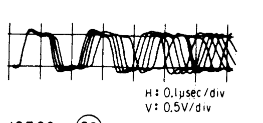
IC360 (53) REC/PB

⑨


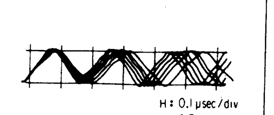
IC360 (54) REC/PB

⑩


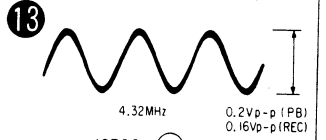
IC360 (57) PB

⑪


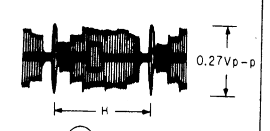
IC360 (59) REC

⑫


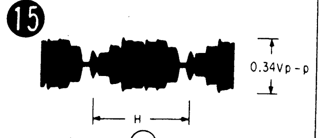
IC360 (60) PB

⑬


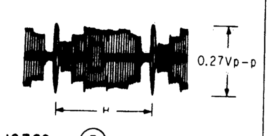
IC360 ① REC/PB

⑭


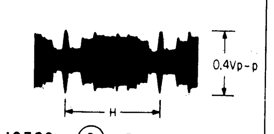
IC360 ③ PB

⑮


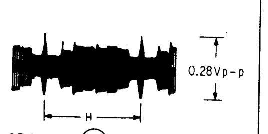
IC 360 ④ PB

⑯


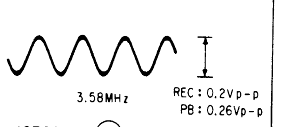
IC360 ⑤ REC

⑰


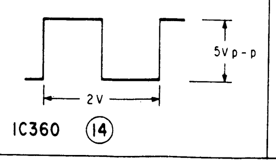
IC360 ⑨ PB

⑱


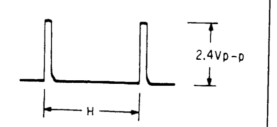
IC360 ⑩ PB

⑲


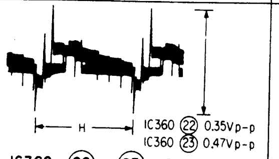
IC360 ⑬ REC / PB

⑳


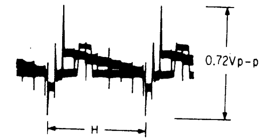
IC360 ⑭

㉑


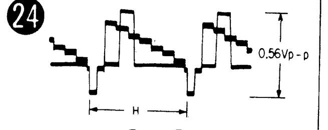
IC360 ⑳ REC/PB

㉒


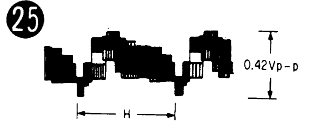
IC360 ㉒, ㉓ PB

㉓


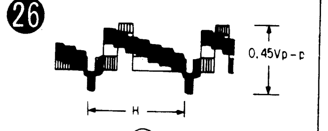
IC360 ㉕ REC

㉔


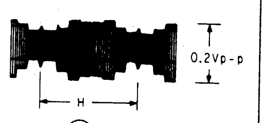
IC360 ㉚, ㉛ REC/PB

㉕


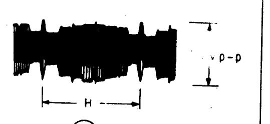
IC360 ㉟ REC

㉖


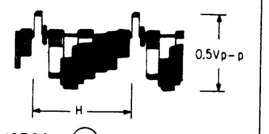
IC360 ㉟ PB

㉗


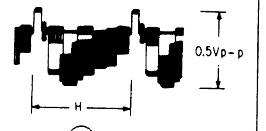
IC360 ㊴ REC

㉘


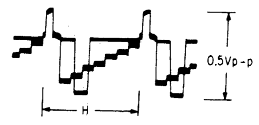
IC360 ㊴ PB

㉙


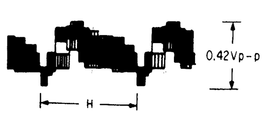
IC360 ㊺ REC / PB

㉚


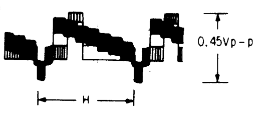
IC360 ㊼ REC

㉛


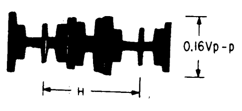
IC360 ㊼ PB

㉜


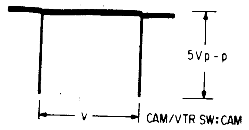
IC361 ⑱ REC

㉝


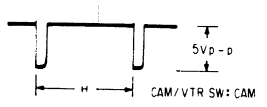
IC361 ⑱ PB

㉞


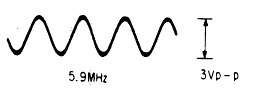
IC364 ① CAM REC C

㉟


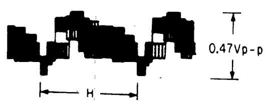
IC367 ⑬ REC / PB

㊱


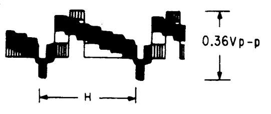
IC367 ⑭ REC/PB

㊲


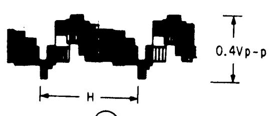
IC250 ⑭ REC / PB

㊳


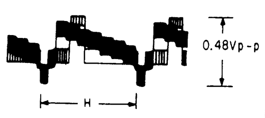
IC369 ② REC

㊴


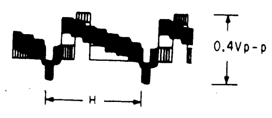
IC369 ① REC

㊵


IC369 ⑮ REC , PB

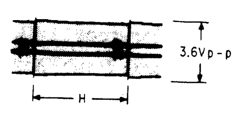
㊶


IC369 ② PB

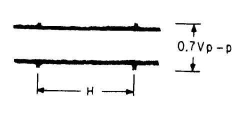
㊷


IC369 ① PB

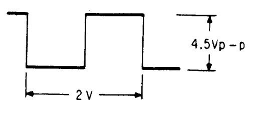
SS-86 BOARD

㊸


IC301 ㉘, ㉝ REC

㊹


IC301 ⑯ PB

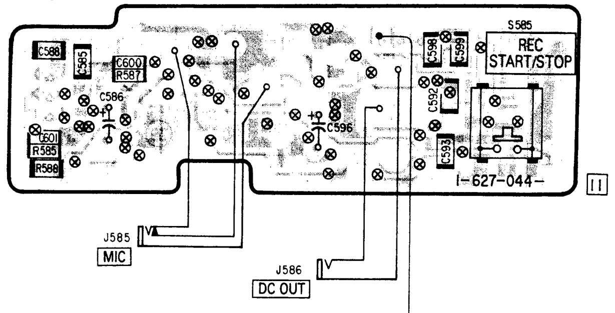
㊺


IC301 ㊴ REC/PB

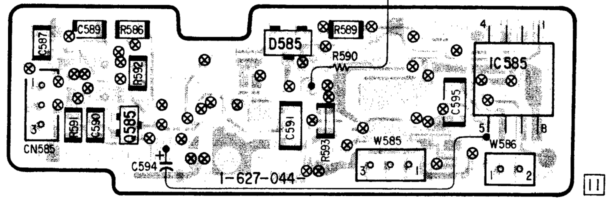
4-5. SS-86 (REC/PB AMP), VA-40 (VIDEO/AUDIO SIGNAL PROCESS), MC-24 (MIC AMP, START/STOP SWITCH) PRINTED WIRING BOARDS

– Ref. No. SS-86, VA-40, MC-24 BOARDS: 2,000 series –

MC-24 BOARD (COMPONENT SIDE)


C598
C600
R587
C585
C586
C596
S585
REC START/STOP
C592
C599
C593
R585
R588
1-627-044-
11
J585
MIC
J586
DC OUT

MC-24 BOARD (CONDUCTOR SIDE)

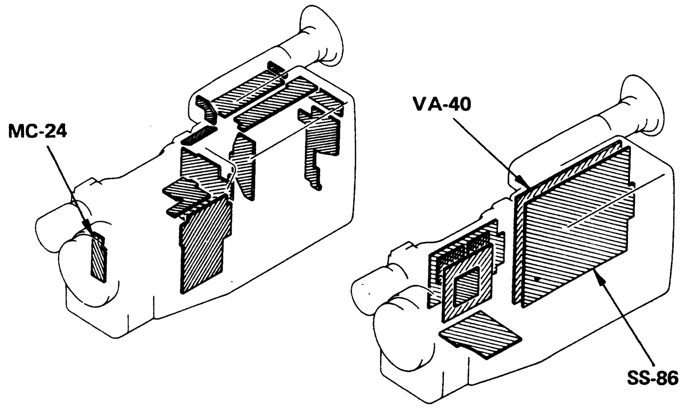

C589
R586
R589
D585
R590
IC585
C594
1-627-044-
W585
W596
CN585
11

Note:
- ⊗ : Through hole.
- ▨ : Pattern of the rear side.

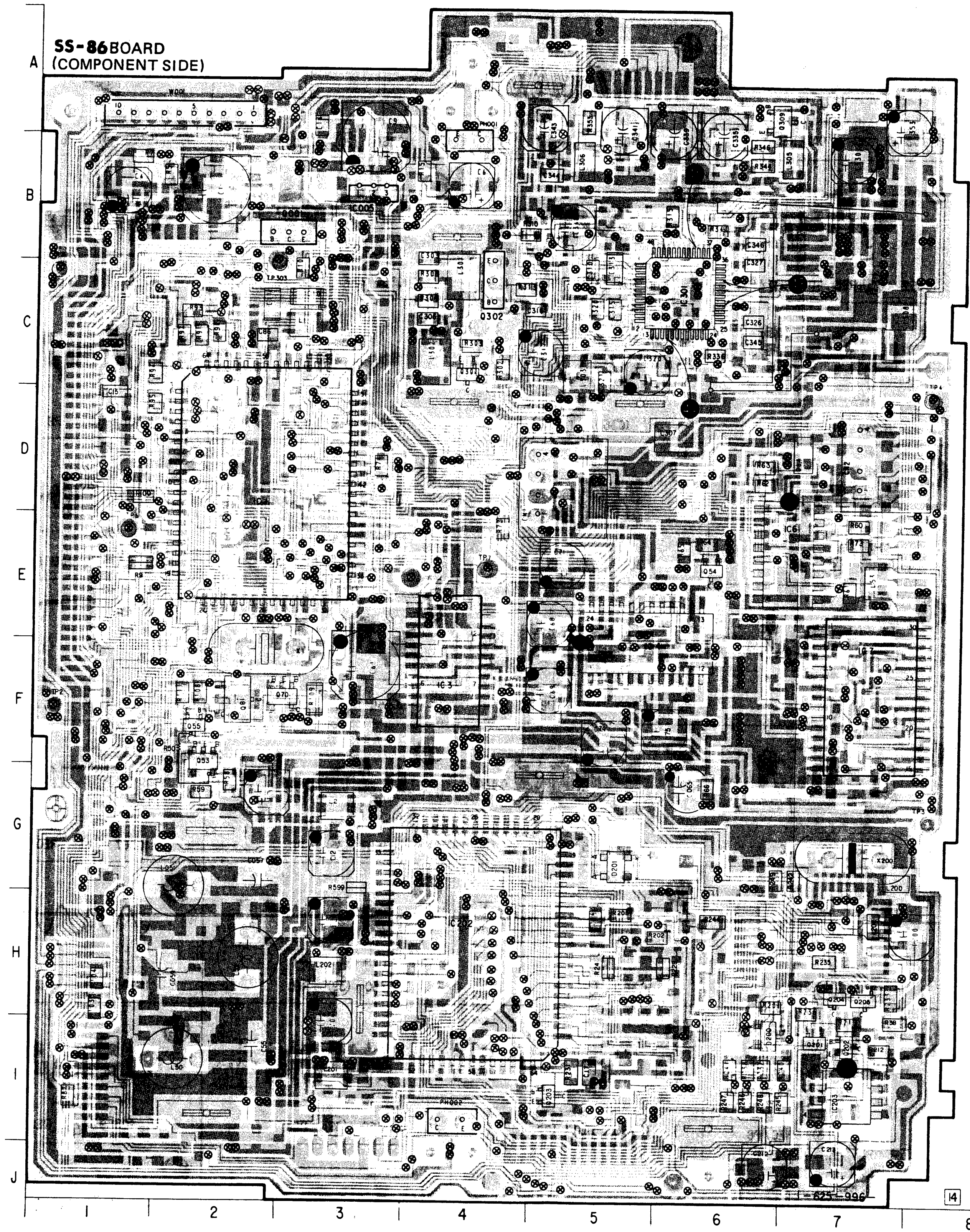
Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

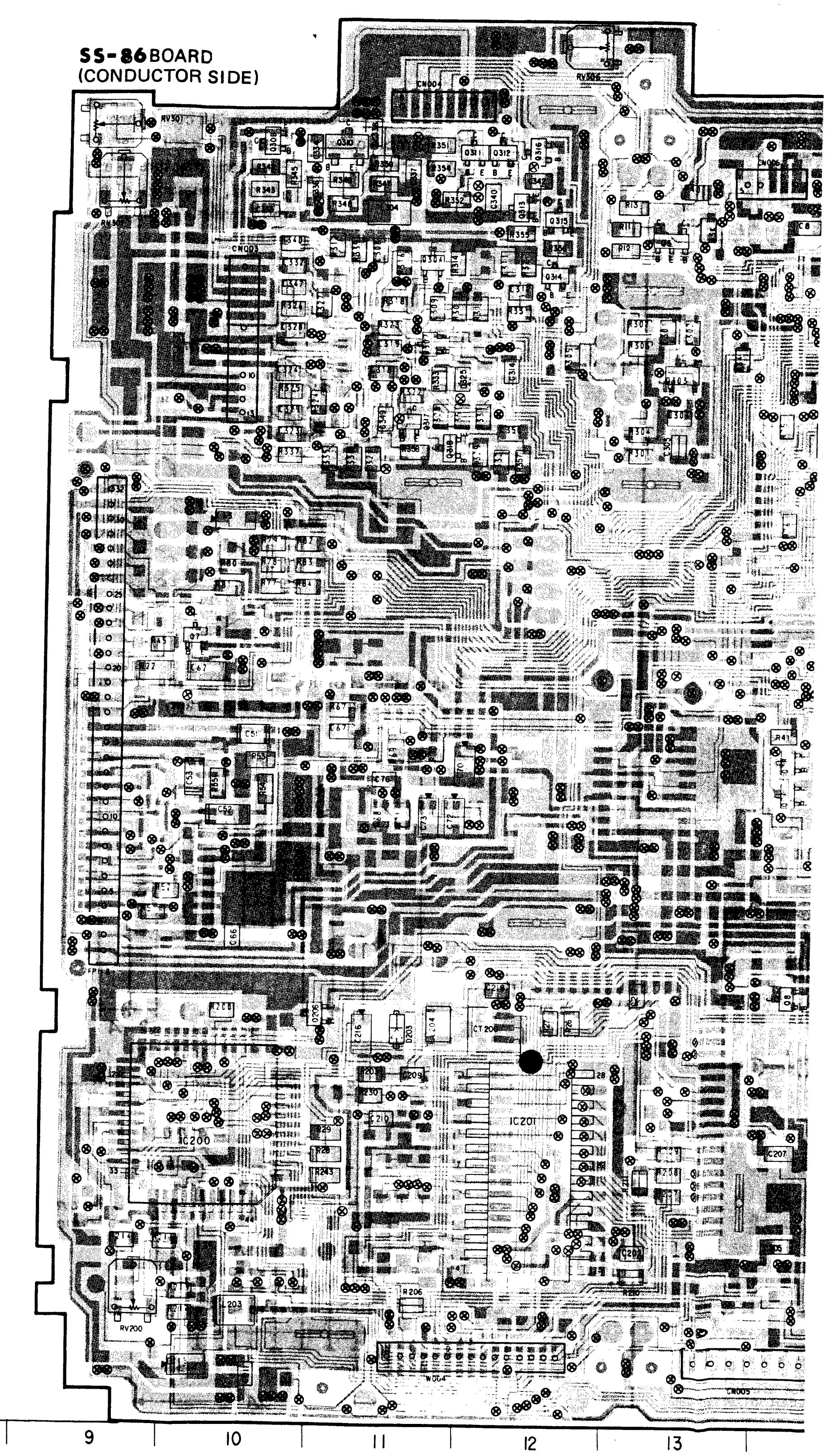
- Digital transistor (SS-86: Q304, Q307, Q308, Q314, Q315, Q316, Q319, VA-40: Q254, Q362, Q377, Q380, Q381, Q391, Q392, Q400, Q403, Q404, Q408, Q409, Q414, Q415, Q416, Q551) is transistor with resistor. Refer to the SS-86 and VA-40 boards schematic diagram for digital transistor.


MC-24
VA-40
SS-86

SS-86 BOARD (COMPONENT SIDE)

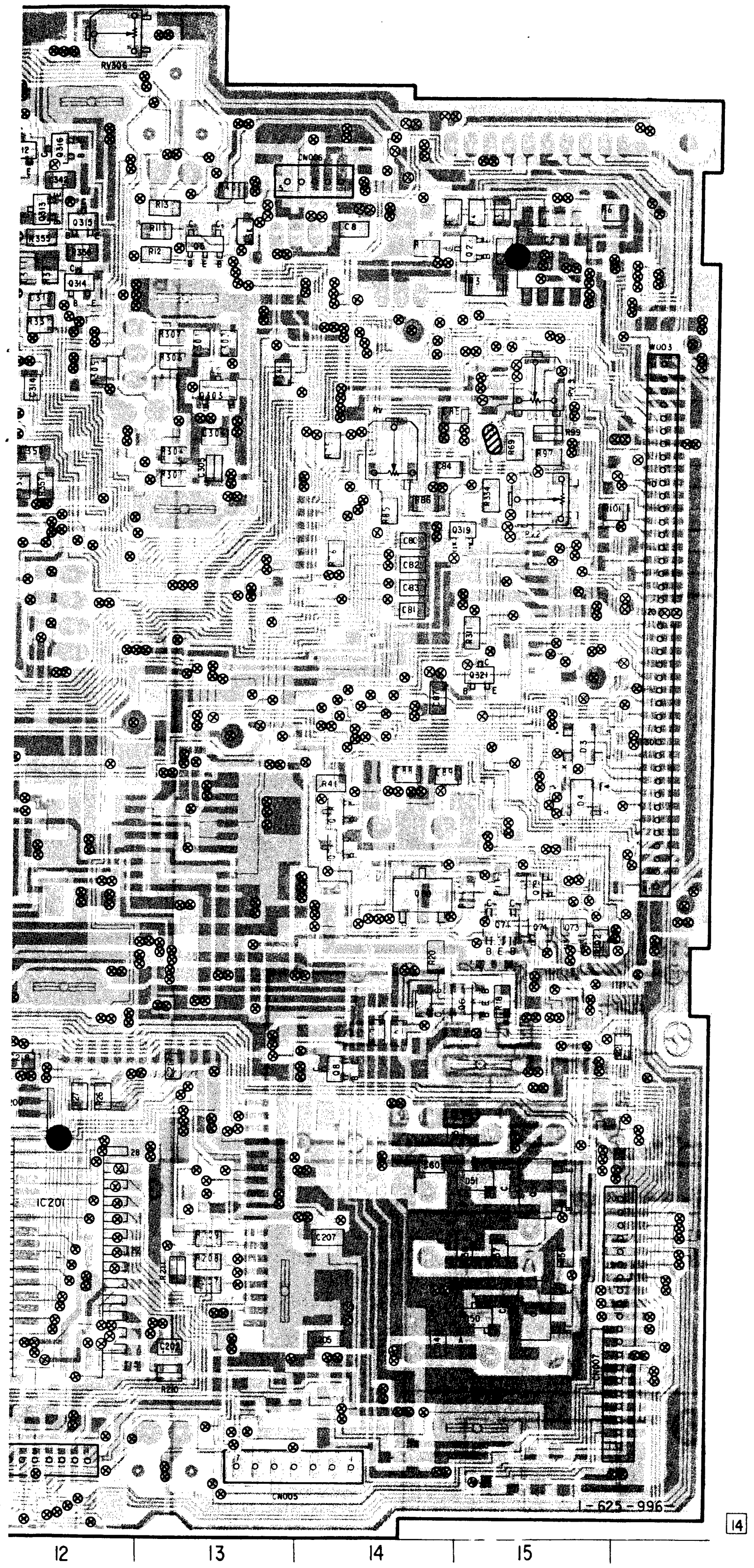

A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
14

SS-86 BOARD (CONDUCTOR SIDE)


9
10
11
12
13
IC200
IC201

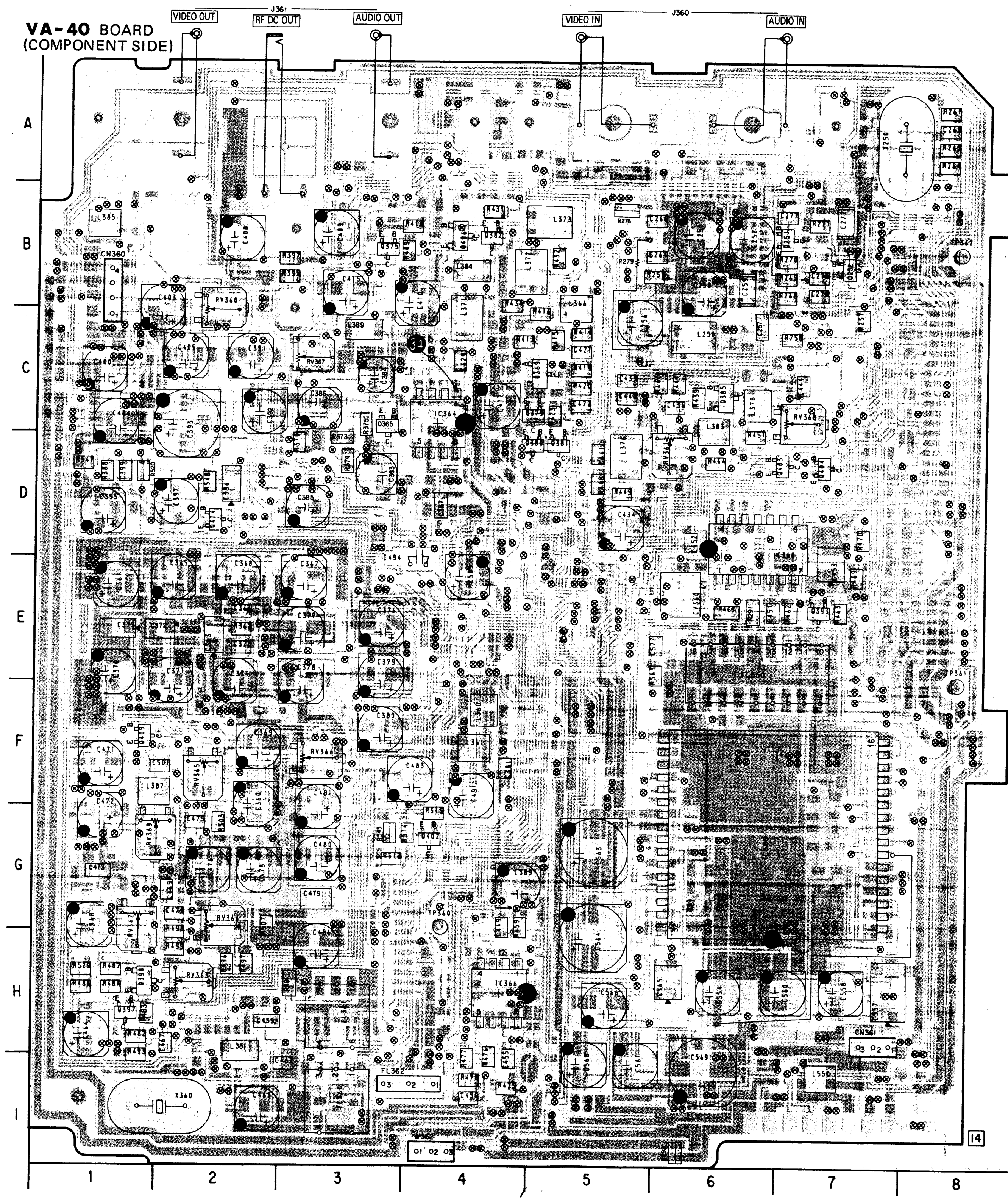
CN001	D-5	D051	H-14	IC202	G-4	Q015	F-2
CN002	D-7	D200	H-6	IC203	I-7	Q010	F-2
CN003	C-10	D201	G-5	IC301	C-6	Q011	F-15
CN004	A-11	D203	D-11			Q013	F-15
CN005	I-5			Q001	B-2	Q014	F-15
CN006	B-14	IC001	D-2	Q002	B-14		
CN007	H-16	IC002	B-15	Q005	B-13	Q016	F-14
		IC003	F-4	Q006	G-14	Q018	F-14
D001	I-14	IC004	F-5	Q007	E-10	Q019	F-15
D003	E-15	IC005	B-3	Q008	G-14	Q010	F-14
D004	F-15	IC006	E-6	Q051	H-15	Q011	F-2
D007	E-10	IC007	F-7	Q052	H-15	Q211	H-7
D008	I-14	IC200	H-10	Q053	G-2	Q212	I-7
D050	H-15	IC201	H-12	Q054	E-6	Q213	I-5
						Q214	H-7

FOR TABLE OF WAVEFORMS, SEE PA

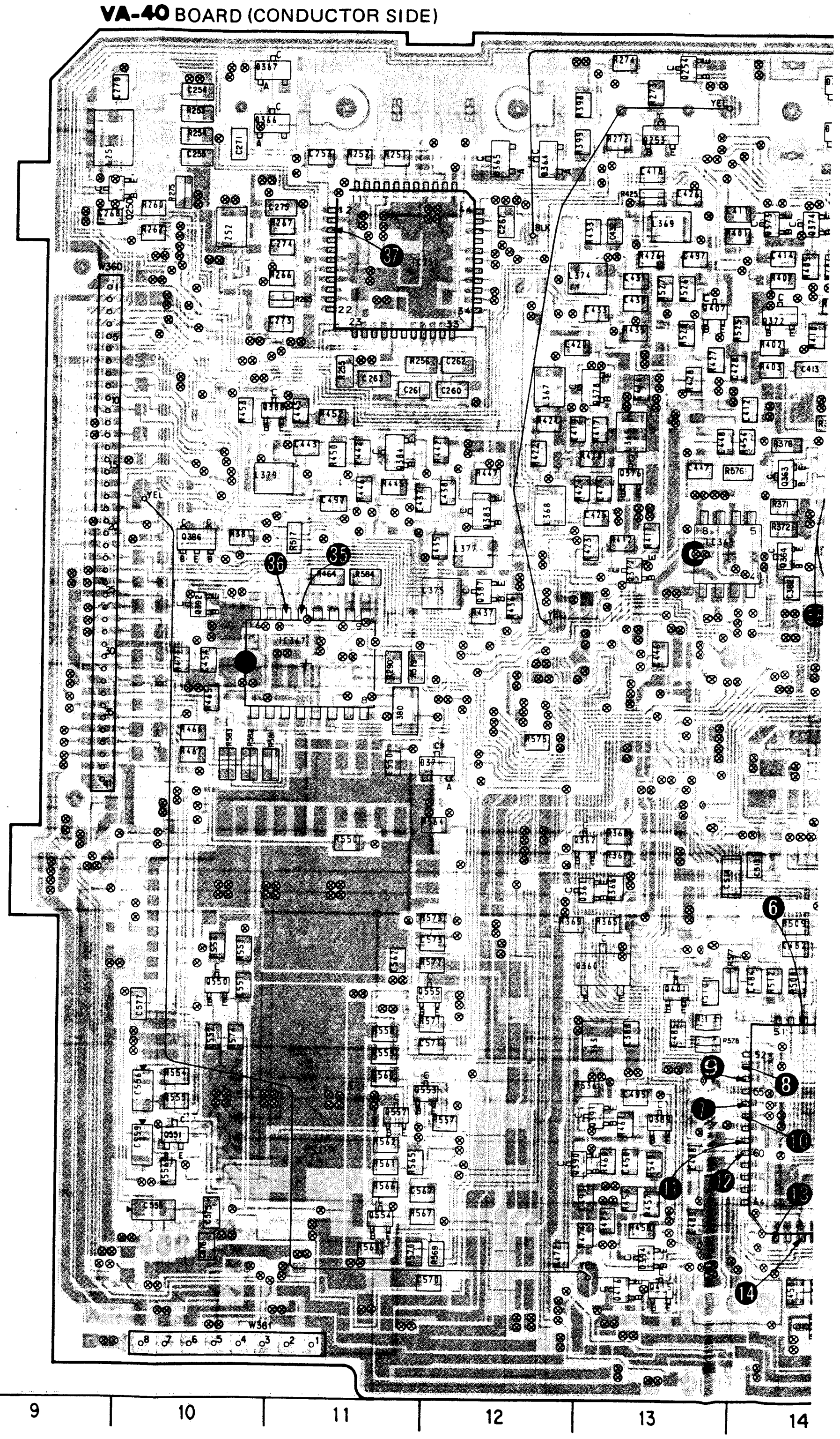

IC201
CN005
1-625-996
14
12
13
14
15

IC202	G-4	Q055	F-2	Q205	H-7	RV003	C-15
IC203	I-7	Q070	F-2	Q206	G-10	RV200	I-9
IC301	C-6	Q071	F-15	Q301	D-4	RV301	A-9
		Q073	F-15	Q302	C-4	RV302	B-9
Q001	B-2	Q074	F-15	Q303	C-13		
Q002	B-14			Q304	C-11	TP001	C-1
Q005	B-13	Q076	F-14	Q306	C-11	TP002	F-1
Q006	G-14	Q078	F-14	Q307	C-11	TP003	C-3
Q007	E-10	Q079	F-15	Q317	C-11	TP004	D-7
Q008	G-14	Q080	F-14	Q318	D-11	TP005	G-7
Q051	H-15	Q081	F-2	Q319	D-14	TP006	E-1
Q052	H-15	Q201	H-7	Q320	C-5	TP007	E-4
Q053	G-2	Q202	I-7			TP008	E-3
Q054	E-6	Q203	I-5	RV001	C-14		
		Q204	H-7	RV002	D-15		

VA-40 BOARD
(COMPONENT SIDE)


J361
VIDEO OUT
RF DC OUT
AUDIO OUT
J360
VIDEO IN
AUDIO IN
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
14
CN360
CN361
IC364
IC366
FL362
X360
X250
31

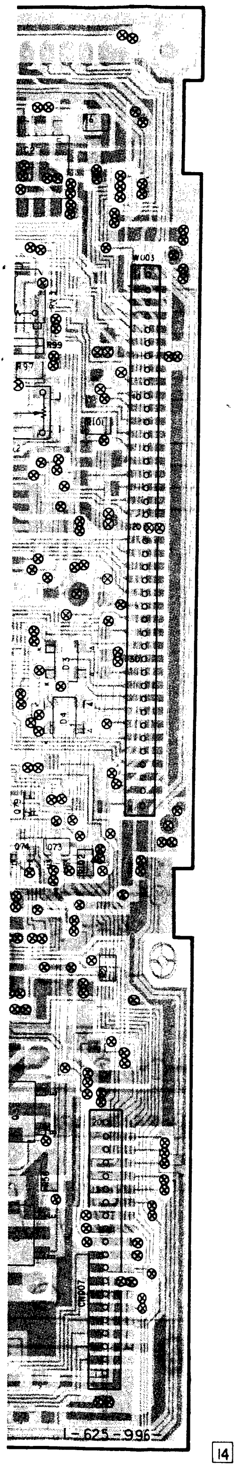
VA-40 BOARD (CONDUCTOR SIDE)


9
10
11
12
13
14
37
36
35
6
7
8
9
10
11
12
13
14

CN360	B-1	D370	H-16	Q250	B-9	Q369	B-15	Q383	D-12	Q396	H-16
CN361	H-7	D371	E-12	Q251	B-7	Q370	B-15	Q384	C-11	Q397	H-1
		D373	B-15	Q252	B-7	Q371	B-16	Q385	C-6	Q398	H-1
CV360	E-6	IC250	B-11	Q253	A-13	Q372	B-14	Q386	D-10	Q399	H-16
		IC360	H-15	Q254	A-13	Q373	B-14	Q387	D-12	Q400	F-15
D-360	A-16	IC361	E-15	Q360	G-13	Q374	B-14	Q388	C-10	Q401	G-13
D361	A-16	IC362	C-16	Q361	F-13	Q375	B-3	Q389	H-13	Q402	G-4
D362	A-14	IC364	C-4	Q362	F-13	Q376	C-13	Q390	H-13	Q403	D-7
D363	A-14	IC365	D-13	Q363	C-14	Q377	D-13	Q391	H-13	Q404	D-7
D364	A-12	IC366	H-4	Q364	D-14	Q378	C-13	Q392	D-10	Q405	B-16
D365	A-12	IC367	E-11	Q365	C-3	Q379	C-5	Q393	E-7	Q406	B-4
D366	A-10	IC368	D-6	Q366	D-15	Q380	D-5	Q394	H-13	Q407	B-13
D367	A-10	IC369	D-14	Q367	D-15	Q381	D-5	Q395	I-14	Q408	F-16
D369	C-5	IC550	G-6	Q368	C-15	Q382	B-4				

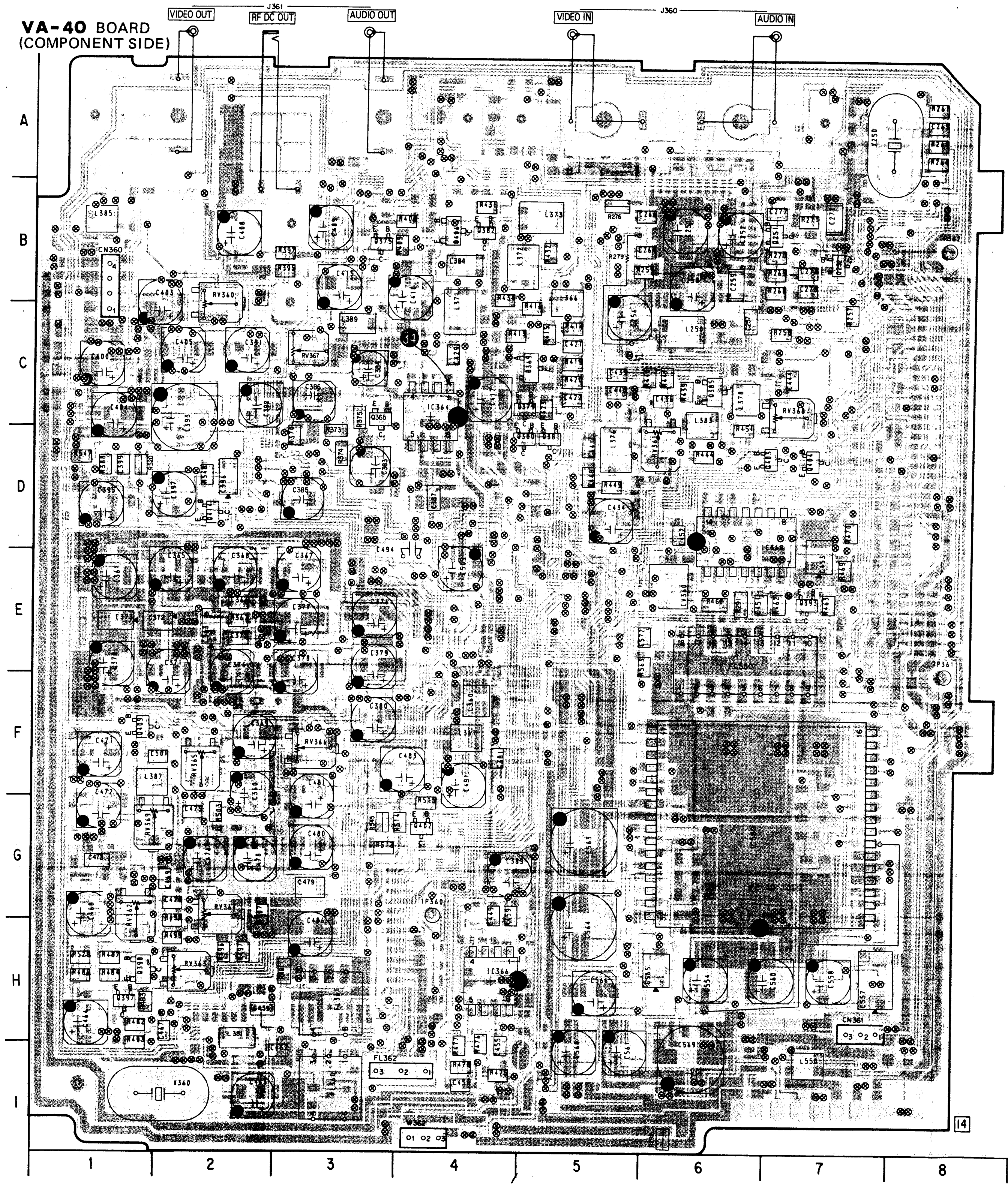
VIDEO, AUDIO VIDEO, AUDIO

FOR TABLE OF WAVEFORMS, SEE PAGE 100 AND 101.

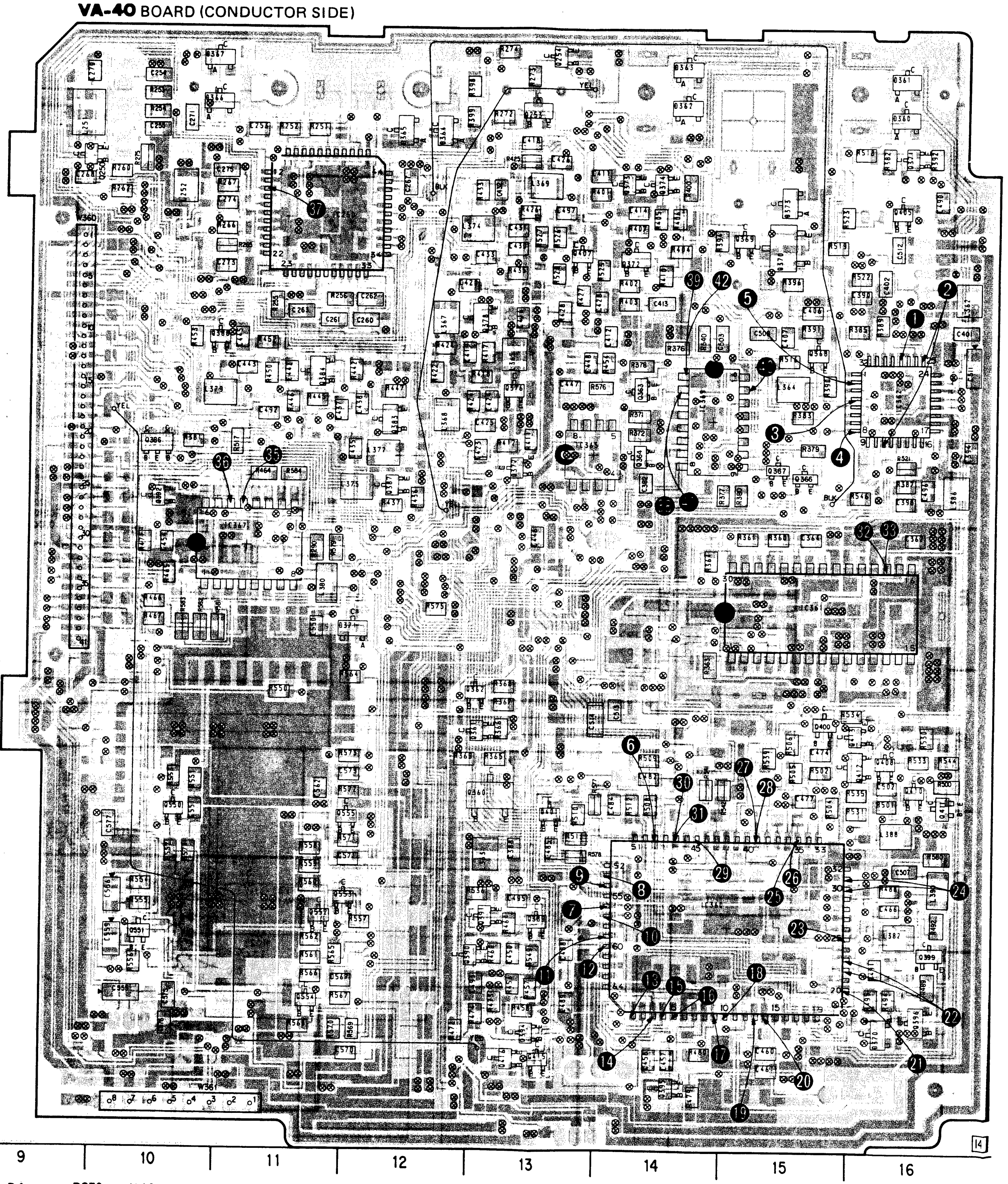


RV003	C·15
RV200	I·9
RV301	A·9
RV302	B·9
TP001	C·1
TP002	F·1
TP003	C·3
TP004	D·7
TP005	G·7
TP006	E·1
TP007	E·4
TP008	E·3

VA-40 BOARD
(COMPONENT SIDE)



VA-40 BOARD (CONDUCTOR SIDE)



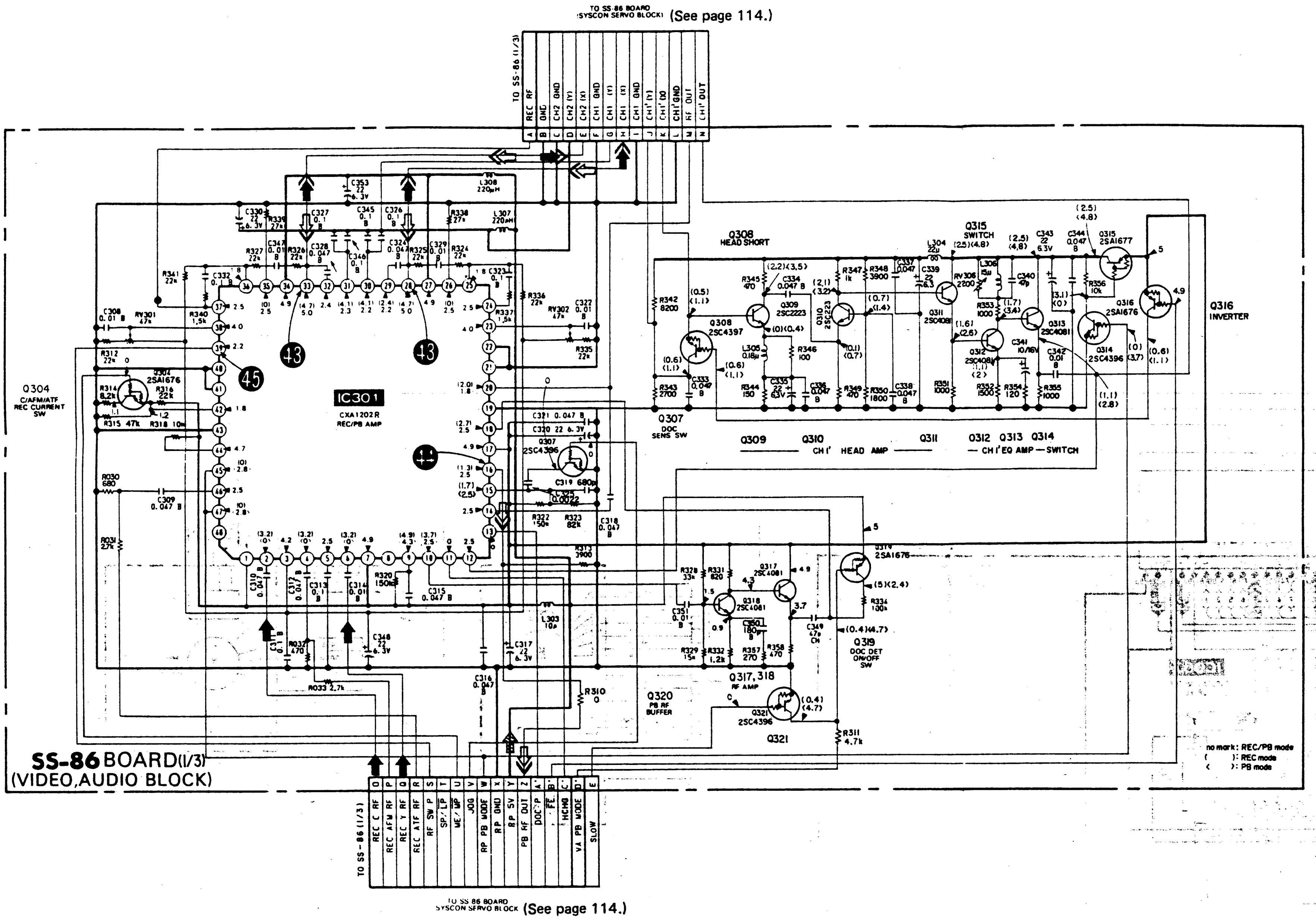
CN360	B·1
CN361	H·7
CV360	E·6
D·360	A·16
D361	A·16
D362	A·14
D363	A·14
D364	A·12
D365	A·12
D366	A·10
D367	A·10
D369	C·5
D370	H·16
D371	E·12
D373	B·15
IC250	B·11
IC360	H·15
IC361	E·15
IC362	C·16
IC364	C·4
IC365	D·13
IC366	H·4
IC367	E·11
IC368	D·6
IC369	D·14
IC550	G·6
Q250	B·9
Q251	B·7
Q252	B·7
Q253	A·13
Q254	A·13
Q360	G·13
Q361	F·13
Q362	F·13
Q363	C·14
Q364	D·14
Q365	C·3
Q366	D·15
Q367	D·15
Q368	C·15
Q369	B·15
Q370	B·15
Q371	B·16
Q372	B·14
Q373	B·14
Q374	B·14
Q375	B·3
Q376	C·13
Q377	D·13
Q378	C·13
Q379	C·5
Q380	D·5
Q381	D·5
Q382	B·4
Q383	D·12
Q384	C·11
Q385	C·6
Q386	D·10
Q387	D·12
Q388	C·10
Q389	H·13
Q390	H·13
Q391	H·13
Q392	D·10
Q393	E·7
Q394	H·13
Q395	I·14
Q396	H·16
Q397	H·1
Q398	H·1
Q399	H·16
Q400	F·15
Q401	G·13
Q402	G·4
Q403	D·7
Q404	D·7
Q405	B·16
Q406	B·4
Q407	B·13
Q408	F·16
Q409	F·1
Q410	G·16
Q411	G·16
Q412	F·16
Q413	F·16
Q414	D·2
Q415	I·13
Q416	I·13
Q550	G·10
Q551	H·10
Q552	H·11
Q553	G·12
Q554	H·11
Q555	G·12
RV360	B·2
RV361	D·6
RV362	G·1
RV363	H·2
RV364	G·2
RV365	F·2
RV366	F·3
RV367	C·3
RV368	C·7
RV369	G·1

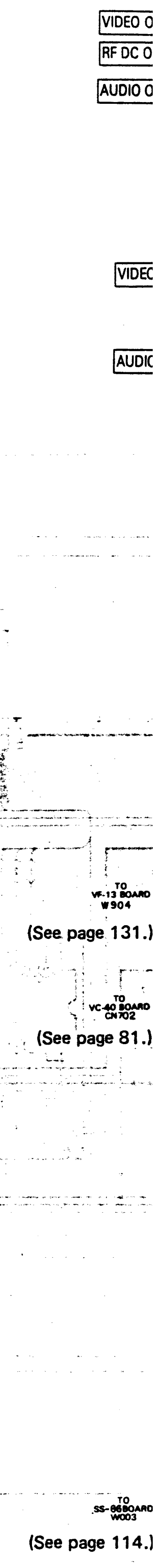
A

SS-86 (REC/PB AMP), VA-40 (VIDEO/AUDIO SIGNAL PROCESS), MC-24 (MIC AMP, START/STOP SWITCH) SCHEMATIC DIAGRAM

– Ref. No. SS-86, VA-40, MC-24 BOARDS: 2,000 series –

B C D E F G H


TO SS-86 BOARD (SYSCON SERVO BLOCK) (See page 114.)
TO SS-86 (1/3)
A REC RF
B GND
C CH2 GND
D CH2 (Y)
E CH2 (X)
F CH1 GND
G CH1 (Y)
H CH1 (X)
I CH1 GND
J CH1' (Y)
K CH1' (X)
L CH1' GND
M RF OUT
N CH1' OUT
L308 220μH
L307 220μH
IC301
CXA1202R
REC/PB AMP
Q304
C/AFM/ATF REC CURRENT SW
2SA1676
Q307
2SC4396
DOC SENS SW
Q308
HEAD SHORT
2SC4397
Q309
2SC2223
Q310
2SC2223
Q311
2SC4081
Q312
2SC4081
Q313
2SC4081
Q314
2SC4396
Q315
SWITCH
2SA1677
Q316
2SA1676
INVERTER
Q309 Q310 Q311 — CH1' HEAD AMP —
Q312 Q313 Q314 — CH1' EQ AMP — SWITCH
Q317, 318
RF AMP
2SC4081
Q319
2SA1676
DOC DET ON/OFF SW
Q320
PB RF BUFFER
Q321
2SC4396
R310 0
R311 4.7k
C316 0.047 B
R033 2.7k
SS-86 BOARD (1/3)
(VIDEO, AUDIO BLOCK)
TO SS-86 (1/3)
O REC C RF
P REC AFM RF
Q REC Y RF
R REC ATF RF
S RF SW P
T SP/LP
U ME/MP
V JOG
W RP PB MODE
X RP GND
Y RP SV
Z PB RF OUT
A' DOC P
B' FE
C' HCHG
D' VA PB MODE
E SLOW
TO SS-86 BOARD SYSCON SERVO BLOCK (See page 114.)
no mark : REC/PB mode
( ) : REC mode
( ) : PB mode


VIDEO O
RF DC O
AUDIO O
VIDEO
AUDIO
TO VF-13 BOARD W904
(See page 131.)
TO VC-40 BOARD CN702
(See page 81.)
TO SS-86 BOARD W003
(See page 114.)

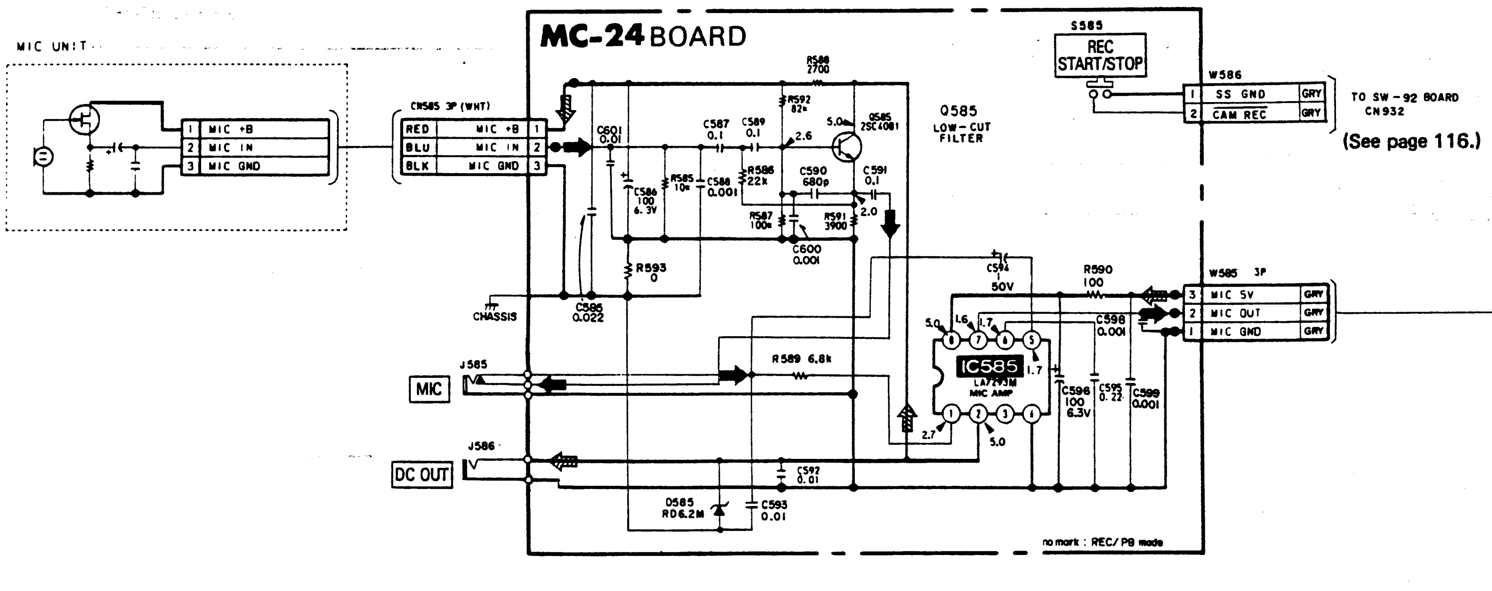
I

Note:

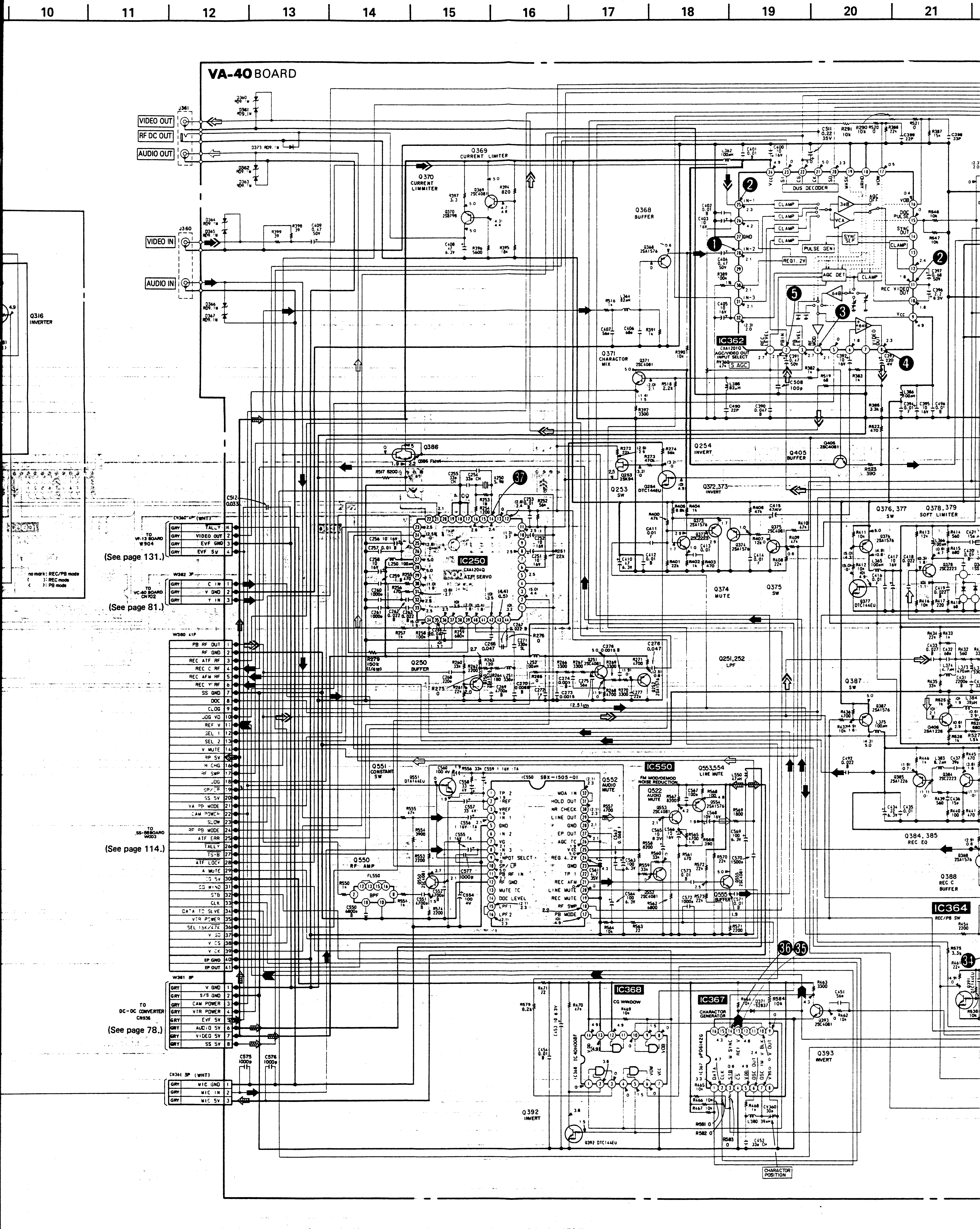
- Signal path.

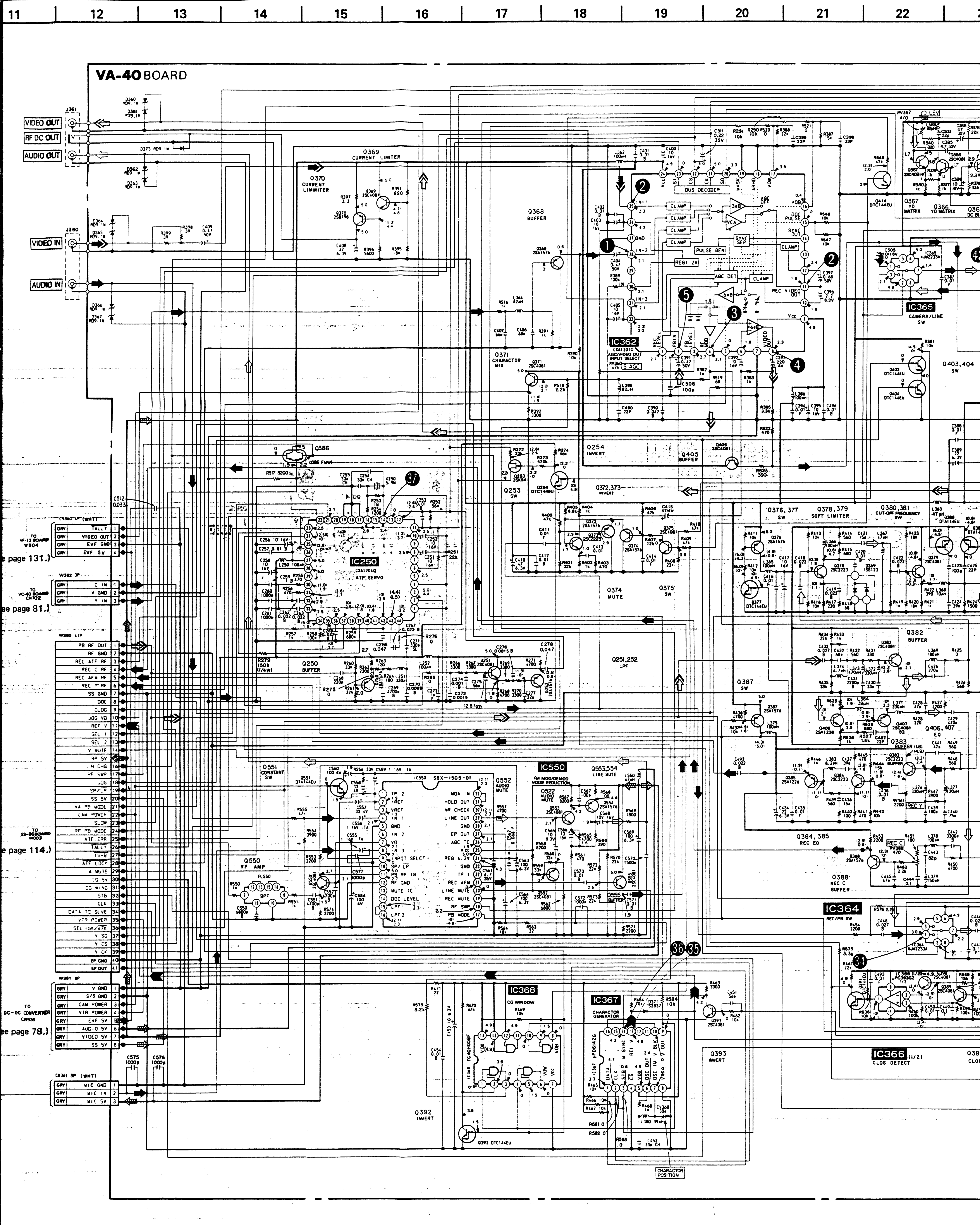
➡ : REC Y Signal
⇨ : PB Y Signal
➡ : REC CHROMA Signal
⇨ : PB CHROMA Signal
➡ : REC Y/CHROMA Signal
⇨ : PB Y/CHROMA Signal
➡ : REC AUDIO Signal
⇨ : PB AUDIO Signal

J K L

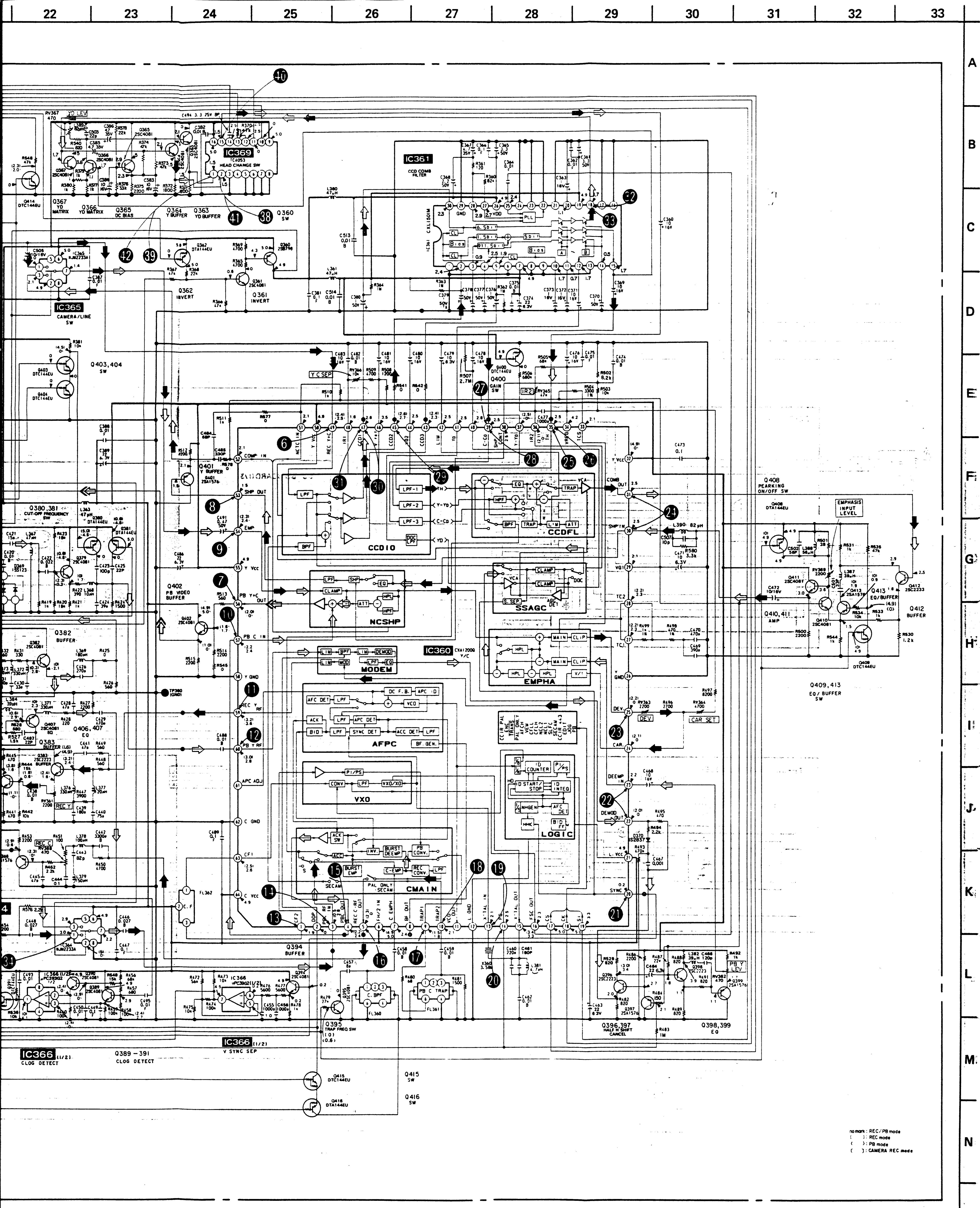

MIC UNIT
1 MIC +B
2 MIC IN
3 MIC GND
CN585 3P (WHT)
RED MIC +B 1
BLU MIC IN 2
BLK MIC GND 3
MC-24 BOARD
Q585
2SC4081
Q585
LOW-CUT FILTER
S585
REC START/STOP
W586
1 SS GND GRY
2 CAM REC GRY
TO SW-92 BOARD CN932
(See page 116.)
W585 3P
3 MIC 5V GRY
2 MIC OUT GRY
1 MIC GND GRY
TO DC-DC CONVERTER CN936
(See page 78.)
R590 100
C598 0.001
C596 100 6.3V
C595 0.22
C599 0.001
IC585
LA7293M
MIC AMP
R589 6.8k
CHASSIS
C585 0.022
R593 0
J585
MIC
J586
DC OUT
D585 RD6.2M
C592 0.01
C593 0.01
C600 0.001
C590 680p
C591 0.1
R588 2700
R592 82k
C587 0.1
C589 0.1
C601 0.01
C586 100 6.3V
R585 10k
C588 0.001
R586 22k
R587 100k
R591 3900
no mark : REC/PB mode

M N O P


10
11
12
13
14
15
16
17
18
19
20
21
VA-40 BOARD
VIDEO OUT
RF DC OUT
AUDIO OUT
VIDEO IN
AUDIO IN
J361
J360
Q316 INVERTER
Q369 CURRENT LIMITER
Q370 CURRENT LIMMITER
Q368 BUFFER
Q371 CHARACTOR MIX
IC362 CXA1201Q AGC/VIDEO OUT INPUT SELECT
DUS DECODER
CLAMP
PULSE GEN
SYNC SEP
AGC DET
REG1.2V
VCA
REC VIDEO OUT
Q386
Q254 INVERT
Q405 BUFFER
Q253 SW
Q372,373 INVERT
Q374 MUTE
Q375 SW
Q376,377 SW
Q378,379 SOFT LIMITER
IC250 CXA1204Q ATF SERVO
Q250 BUFFER
Q251,252 LPF
Q387 SW
Q384,385 REC EQ
Q388 REC C BUFFER
IC364 REC/PB SW
Q551 CONSTANT SW
Q550 RF AMP
IC550 SBX-1505-01
FM MOD/DEMOD NOISE REDUCTION
Q552 AUDIO MUTE
Q553,554 LINE MUTE
Q555 BUFFER
IC368 CG WINDOW
IC367 CHARACTOR GENERATOR
Q392 INVERT
Q393 INVERT
CHARACTOR POSITION
TO VF-13 BOARD W904
(See page 131.)
TO VC-40 BOARD CN702
(See page 81.)
TO SS-868BOARD W003
(See page 114.)
TO DC-DC CONVERTER CN936
(See page 78.)
no mark: REC/PB mode
( ): REC mode
< >: PB mode
TALLY
VIDEO OUT
EVF GND
EVF 5V
C IN
V GND
Y IN
PB RF OUT
RF GND
REC ATF RF
REC C RF
REC AFM RF
REC Y RF
SS GND
DOC
CLOG
JOG VD
REF V
SEL 1
SEL 2
V MUTE
RP 5V
H CHG
RF SWP
JOG
SP/LP
SS 5V
VA PB MODE
CAM POWER
SLOW
RP PB MODE
ATF ERR
TALLY
TS-B
ATF LOCK
A MUTE
SS 5V
CG WIND
STB
CLK
DATA TO SLVE
VTR POWER
SEL 15K/27K
V SO
V CS
V CK
EP GND
EP OUT
V GND
S/S GND
CAM POWER
VTR POWER
EVF 5V
AUDIO 5V
VIDEO 5V
SS 5V
MIC GND
MIC IN
MIC 5V


11
12
13
14
15
16
17
18
19
20
21
22
VA-40 BOARD
J361
VIDEO OUT
RF DC OUT
AUDIO OUT
J360
VIDEO IN
AUDIO IN
Q369 CURRENT LIMITER
Q370 CURRENT LIMMITER
Q368 BUFFER
Q371 CHARACTOR MIX
IC362 CXA1201Q AGC/VIDEO OUT INPUT SELECT
DUS DECODER
CLAMP
VCA
AGC OFF
SYNC SEP
PULSE GEN
REG 1.2V
AGC DET
REC VIDEO OUT
DOC PULSE
SYNC OUT
RV360 L/S AGC
IC365 CAMERA/LINE SW
RV367 YD LEV
Q367 YD MATRIX
Q366 YD MATRIX
Q414 DTC144EU
Q403,404 SW
Q386 FMW
Q253 SW
Q254 INVERT
Q405 BUFFER
Q372,373 INVERT
Q374 MUTE
Q375 SW
IC250 CXA1204Q ATF SERVO
Q250 BUFFER
Q251,252 LPF
Q376, 377 SW
Q378,379 SOFT LIMITER
Q380,381 CUT-OFF FREQUENCY SW
Q382 BUFFER
Q387 SW
Q406, 407 EQ
Q383 BUFFER (L6)
Q385
Q384, 385 REC EQ
Q388 REC C BUFFER
RV361 REC Y
RV368 REC C
CN360 4P (WHT) TO VF-13 BOARD W904
TALLY
VIDEO OUT
EVF GND
EVF 5V
e page 131.)
W382 3P TO VC-40 BOARD CN702
C IN
V GND
Y IN
ee page 81.)
W380 41P
PB RF OUT
RF GND
REC ATF RF
REC C RF
REC AFM RF
REC Y RF
SS GND
DOC
CLOG
JOG VD
REF V
SEL 1
SEL 2
V MUTE
RP 5V
H CHG
RF SWP
JOG
SP/LP
SS 5V
VA PB MODE
CAM POWER
SLOW
RP PB MODE
ATF ERR
TALLY
TS-B
ATF LOCK
A MUTE
IG 5V
CG WIND
STB
CLK
DATA TO SLVE
VTR POWER
SEL 15K/47K
V CS
V CK
EP GND
EP OUT
TO SS-86BOARD W003
e page 114.)
Q551 CONSTANT SW
Q550 RF AMP
FL550 BPF
IC550 SBX-1505-01
Q552 AUDIO MUTE
IC550 FM MOD/DEMOD NOISE REDUCTION
Q522 AUDIO MUTE
Q553,554 LINE MUTE
Q555 BUFFER
W381 8P TO DC-DC CONVERTER CN936
V GND
S/S GND
CAM POWER
VTR POWER
EVF 5V
AUDIO 5V
VIDEO 5V
SS 5V
ee page 78.)
CN361 3P (WHT)
MIC GND
MIC IN
MIC 5V
IC368 CG WINDOW
IC367 CHARACTOR GENERATOR
Q393 INVERT
Q392 INVERT
CHARACTOR POSITION
IC364 REC/PB SW
IC366 (1/2) CLOG DETECT

VIDEO/AUD


IC369
TC4053
HEAD CHANGE SW
IC361
CCD COMB FILTER
CXL1501M
IC365
BA7233A
CAMERA/LINE SW
IC360
CXA1200Q
Y/C
CCD10
CCDFL
NCSHP
SSAGC
MODEM
EMPHA
AFPC
VXO
LOGIC
CMAIN
IC366
μPC3902
CLOG DETECT
V SYNC SEP
Q360 SW
Q361 INVERT
Q362 INVERT
Q363 YD BUFFER
Q364 Y BUFFER
Q365 DC BIAS
Q366 YD MATRIX
Q367 YD MATRIX
Q380, 381 CUT-OFF FREQUENCY SW
Q382 BUFFER
Q383 BUFFER (LG)
Q389 - 391 CLOG DETECT
Q394 BUFFER
Q395 TRAP FREQ SW
Q396, 397 HALF H SHIFT CANCEL
Q398, 399 EQ
Q400 GAIN SW
Q401 Y BUFFER
Q402 PB VIDEO BUFFER
Q403, 404 SW
Q406, 407 EQ
Q408 PEARKING ON/OFF SW
Q409, 413 EQ/BUFFER SW
Q410, 411 AMP
Q412 BUFFER
Q415 SW
Q416 SW
EMPHASIS INPUT LEVEL
DEV
CAR SET
PB Y LEV
REC Y
REC C
YD LEV
Y C SEP
TP380 (GND)
C.BPF
PB C TRAP
FL360
FL361
FL362
22
23
24
25
26
27
28
29
30
31
32
33
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

no mark : REC / PB mode
( ) : REC mode
( ) : PB mode
[ ] : CAMERA REC mode

FOR TABLE OF WAVEFORMS, SEE PAGE 100 AND 101.

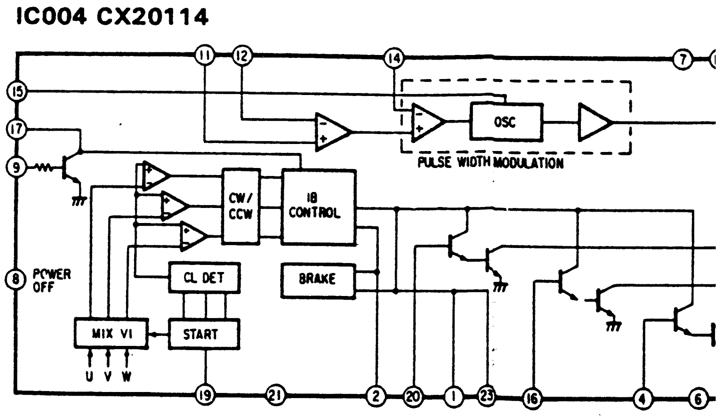
4-6. SS-86 (SYSTEM CONTROL, SERVO), SW-92 (START/STOP, STANDBY SWITCH, INPUT/OUTPUT JACK), ZM-8 (ZOOM SWITCH), PA-13 (POWER), CC-7 (MODE SWITCH),

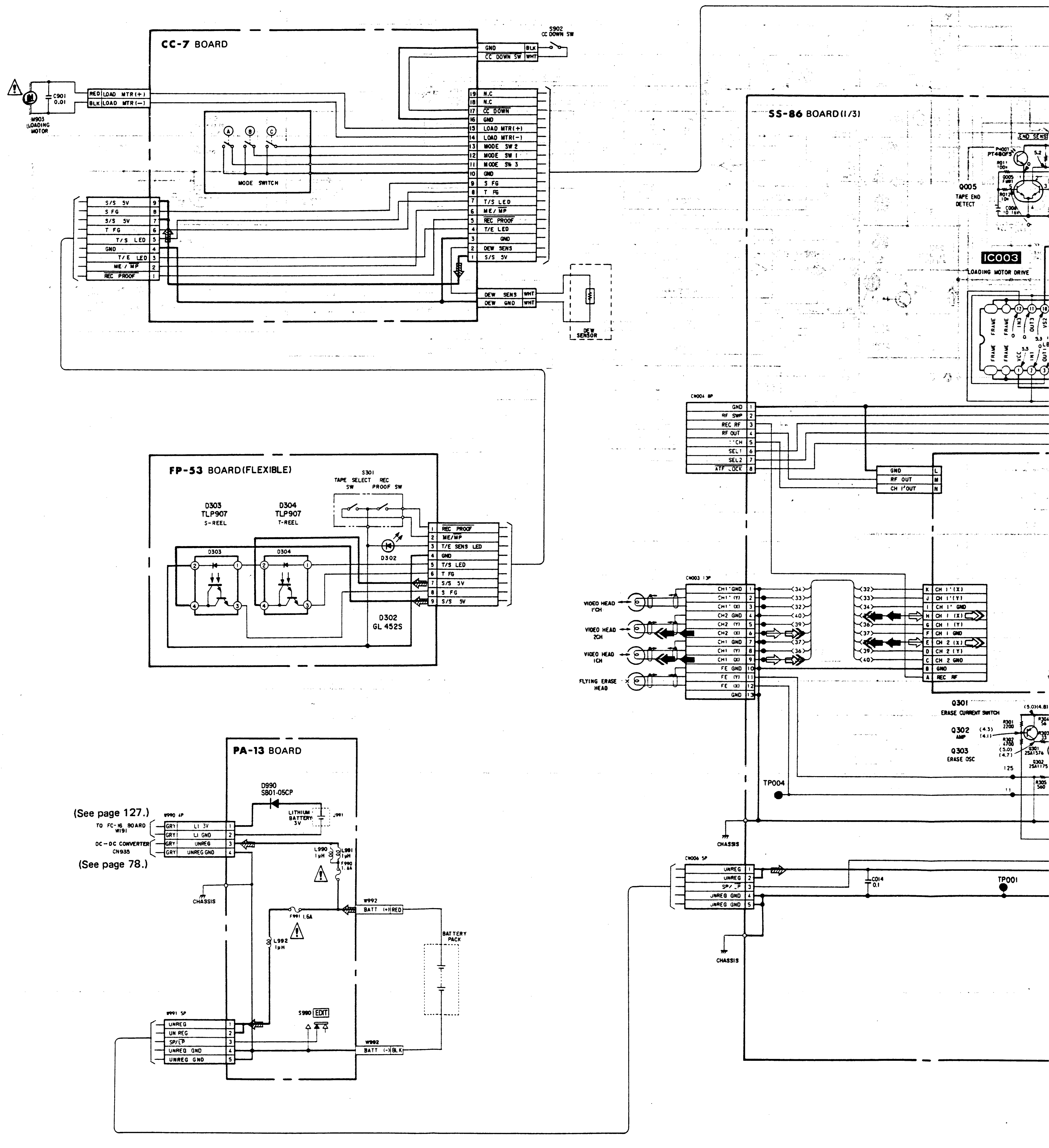
– Ref. No. SS-86 BOARD: 2,000 series, SW-92, ZM-8, PA-13, CC-7, FP-53 BOARDS: 3,000 series –

Note:

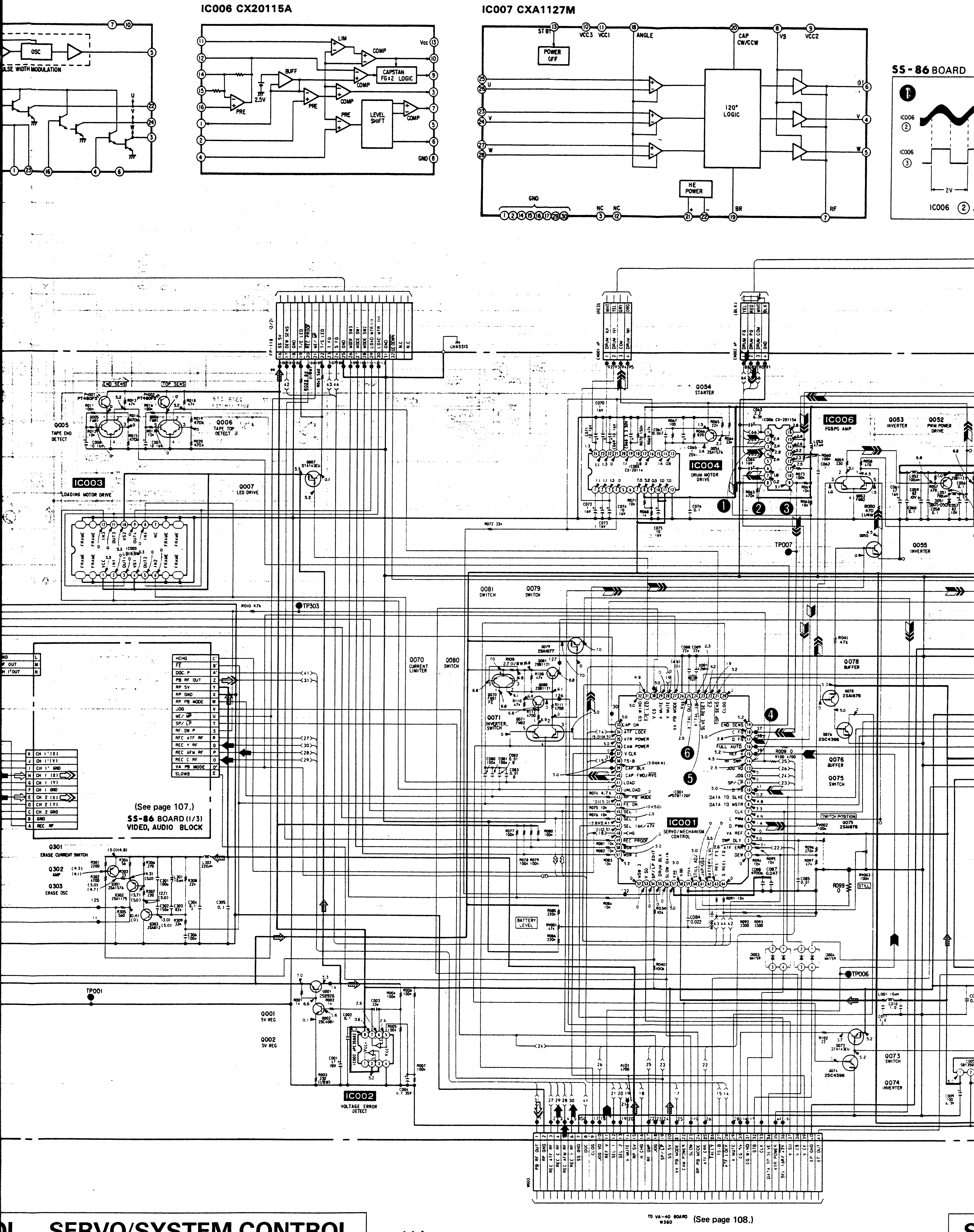
- Signal path
  - ➡ : REC Y Signal
  - ➡ : REC CHROMA Signal
  - ➡» : REC Y/CHROMA Signal
  - ⇨» : PB Y/CHROMA Signal
  - ➡ : REC AUDIO Signal
  - ⇨ : PB AUDIO Signal

	REC	REC/PB	PB
Drum speed servo		➡	
Drum phase servo		➡›	
Drum servo (speed and phase)		➡»	
Capstan speed servo		➡	
Capstan phase servo	➡›		⇨›
Capstan servo (speed and phase)		➡»	
Ref. signal	➡	➡	⇨

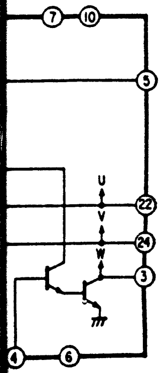

IC004 CX20114
OSC
PULSE WIDTH MODULATION
CW/CCW
18 CONTROL
POWER OFF
CL DET
BRAKE
MIX VI
START
U V W


CC-7 BOARD
S902 CC DOWN SW
M903 LOADING MOTOR
C901 0.01
LOAD MTR(+)
LOAD MTR(−)
MODE SWITCH
N.C
CC DOWN
GND
MODE SW 2
MODE SW 1
MODE SW 3
S FG
T FG
T/S LED
ME/MP
REC PROOF
T/E LED
DEW SENS
S/S 5V
DEW GND
DEW SENSOR
FP-53 BOARD(FLEXIBLE)
S301 TAPE SELECT SW
REC PROOF SW
D303 TLP907 S-REEL
D304 TLP907 T-REEL
D302
D302 GL452S
T/E SENS LED
PA-13 BOARD
D990 S801-05CP
LITHIUM BATTERY 3V
(See page 127.)
TO FC-16 BOARD W191
DC-DC CONVERTER CN935
(See page 78.)
LI 3V
LI GND
UNREG
UNREG GND
L990 1μH
L991 1μH
F990 1.6A
F991 1.6A
L992 1μH
W992 BATT (+) RED
BATT (−) BLK
BATTERY PACK
S990 EDIT
CHASSIS
SP/LP
SS-86 BOARD(1/3)
Q005 TAPE END DETECT
IC003 LOADING MOTOR DRIVE
CN004 8P
RF SWP
REC RF
RF OUT
SEL1
SEL2
ATF LOCK
CH1' OUT
CN003 13P
VIDEO HEAD 1'CH
VIDEO HEAD 2CH
VIDEO HEAD 1CH
FLYING ERASE HEAD
FE GND
Q301 ERASE CURRENT SWITCH
Q302 AMP
Q303 ERASE OSC
TP004
CN006 5P
C014 0.1
TP001

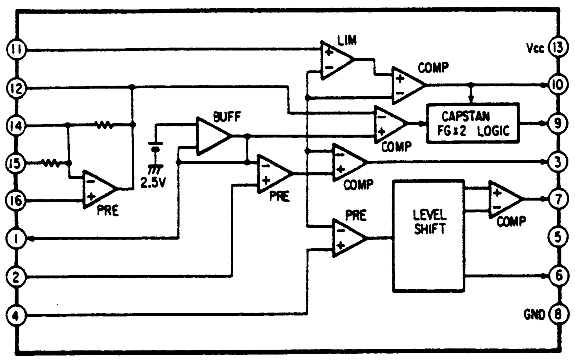
), CC-7 (MODE SWITCH), FP-53 (TAPE SELECT/CASSETTE IN SWITCH) SCHEMATIC DIAGRAM


OSC
PULSE WIDTH MODULATION
IC006 CX20115A
LIM
COMP
BUFF
CAPSTAN FG×2 LOGIC
PRE
LEVEL SHIFT
2.5V
Vcc
GND
IC007 CXA1127M
ST BY
POWER OFF
VCC3
VCC1
ANGLE
CAP CW/CCW
VS
VCC2
120° LOGIC
U
V
W
HE POWER
GND
NC
BR
RF
SS-86 BOARD
IC006 ②
IC006 ③
2V
FP-118
CHASSIS
END SENS
TOP SENS
Q005 TAPE END DETECT
Q006 TAPE TOP DETECT
Q007 LED DRIVE
IC003 LOADING MOTOR DRIVE
IC003 LB1638M
Q054 STARTER
IC004 DRUM MOTOR DRIVE
IC006 FGBPG AMP
Q053 INVERTER
Q052 PWM POWER DRIVE
Q055 INVERTER
TP007
TP303
Q081 SWITCH
Q079 SWITCH
Q070 CURRENT LIMITER
Q080 SWITCH
Q071 INVERTER, SWITCH
Q078 BUFFER
Q076 BUFFER
Q075 SWITCH
IC001 SERVO/MECHANISM CONTROL
BATTERY LEVEL
STILL
(See page 107.)
SS-86 BOARD (1/3)
VIDEO, AUDIO BLOCK
Q301 ERASE CURRENT SWITCH
Q302 AMP
Q303 ERASE OSC
TP001
Q001 5V REG
Q002 5V REG
IC002 VOLTAGE ERROR DETECT
TP006
Q073 SWITCH
Q074 INVERTER
TO VA-40 BOARD W360 (See page 108.)

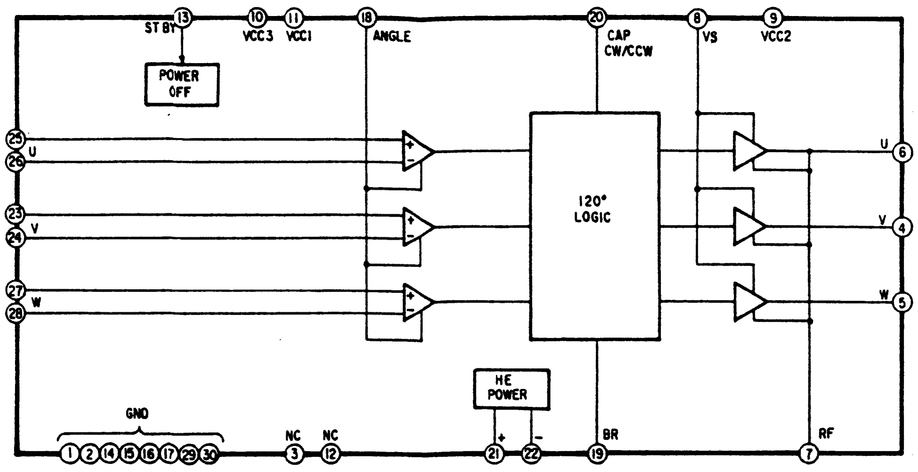
L SERVO/SYSTEM CONTROL


7
10
5
22
24
3
U
V
W
4
6

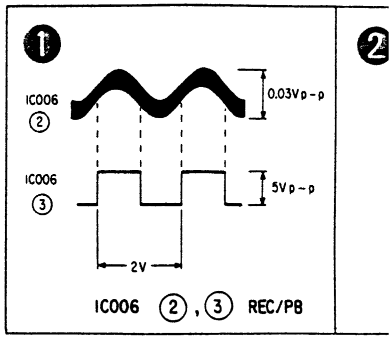
IC006 CX20115A

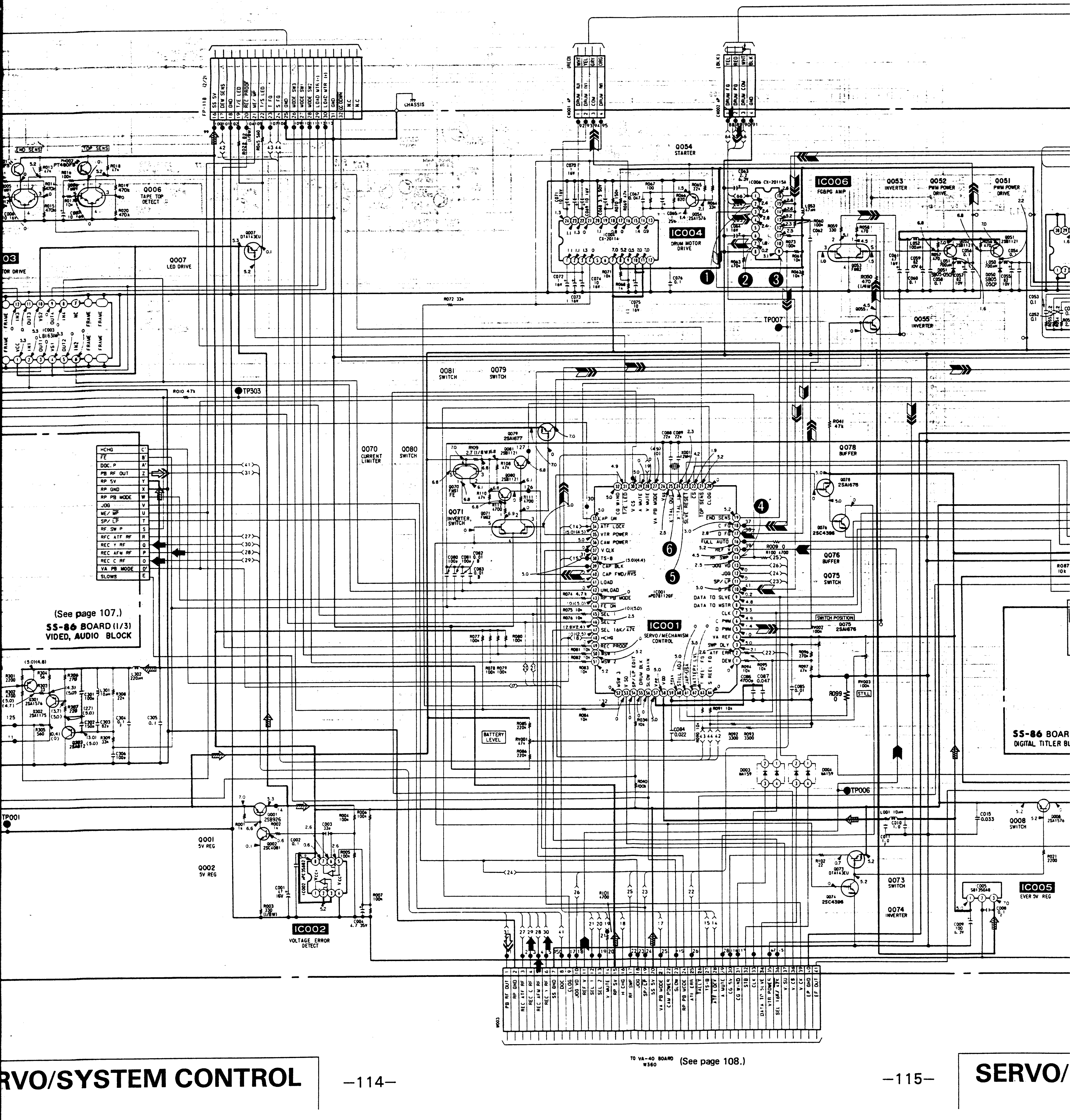

LIM
COMP
BUFF
CAPSTAN FGx2 LOGIC
COMP
2.5V
PRE
PRE
COMP
PRE
LEVEL SHIFT
COMP
Vcc
GND

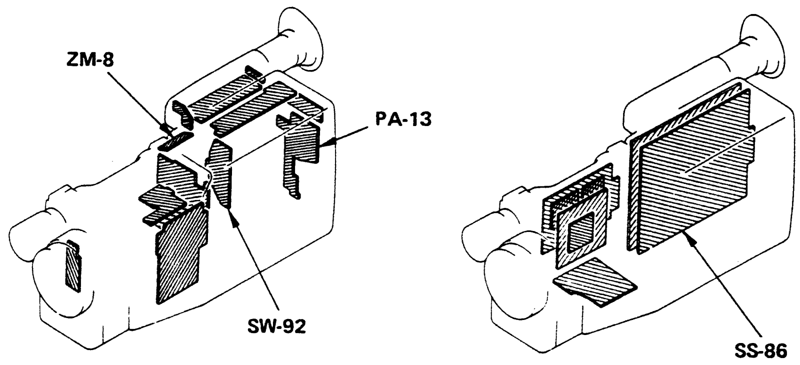
IC007 CXA1127M

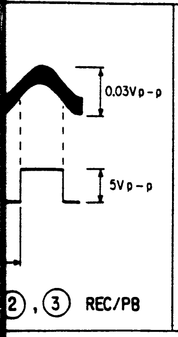

ST BY
POWER OFF
VCC3
VCC1
ANGLE
CAP CW/CCW
VS
VCC2
U
V
W
120° LOGIC
HE POWER
GND
NC
NC
BR
RF

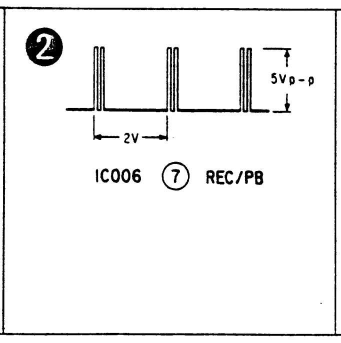
SS-86 BOARD

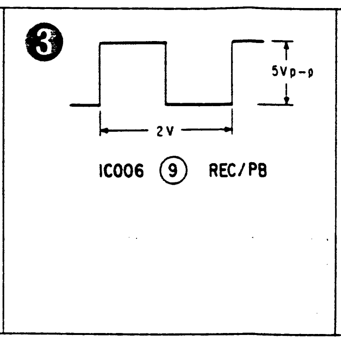


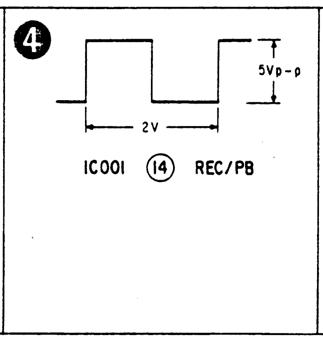

FP-118
CHASSIS
Q054 STARTER
IC006 FG&PG AMP
IC004 DRUM MOTOR DRIVE
Q053 INVERTER
Q052 PWM POWER DRIVE
Q051 PWM POWER DRIVE
Q006 TAPE TOP DETECT
Q007 LED DRIVE
IC003 LB1634M
MOTOR DRIVE
TP007
Q055 INVERTER
TP303
Q081 SWITCH
Q079 SWITCH
Q070 CURRENT LIMITER
Q080 SWITCH
Q071 INVERTER, SWITCH
Q078 BUFFER
Q076 BUFFER
Q075 SWITCH
IC001 SERVO/MECHANISM CONTROL
(See page 107.)
SS-86 BOARD (1/3) VIDEO, AUDIO BLOCK
BATTERY LEVEL
SWITCH POSITION
STILL
SS-86 BOARD
DIGITAL TITLER BL
TP006
TP001
Q001 5V REG
Q002 5V REG
IC002 VOLTAGE ERROR DETECT
Q008 SWITCH
Q073 SWITCH
Q074 INVERTER
IC005 EVER 5V REG
TO VA-40 BOARD W360 (See page 108.)
1
2
3
4
5
6

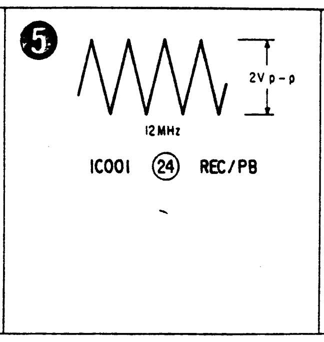

ZM-8
PA-13
SW-92
SS-86

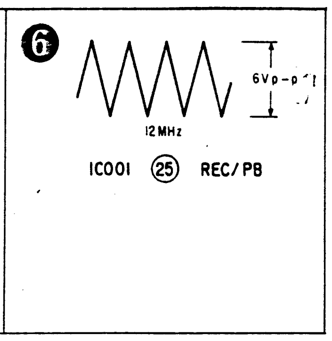


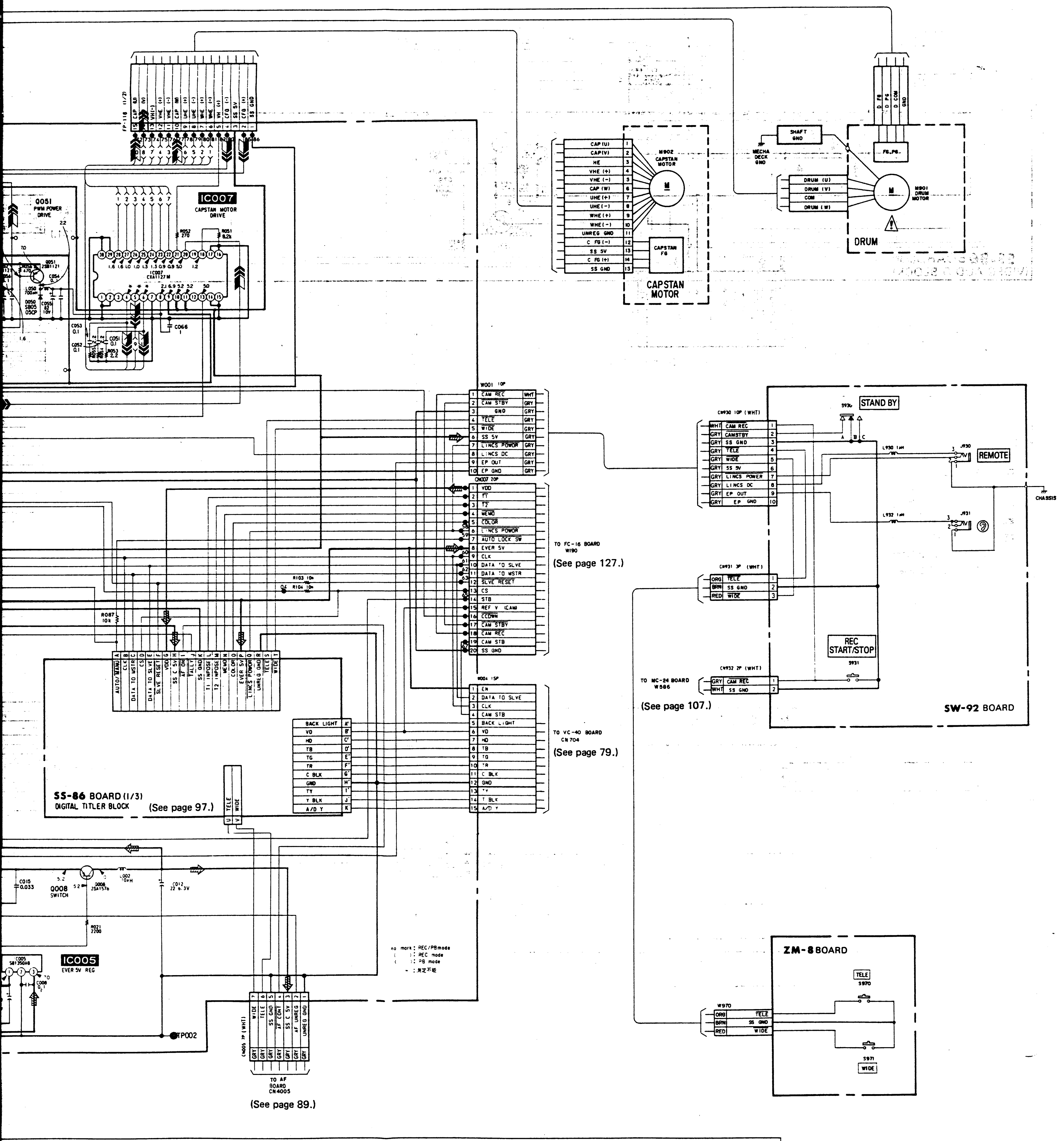










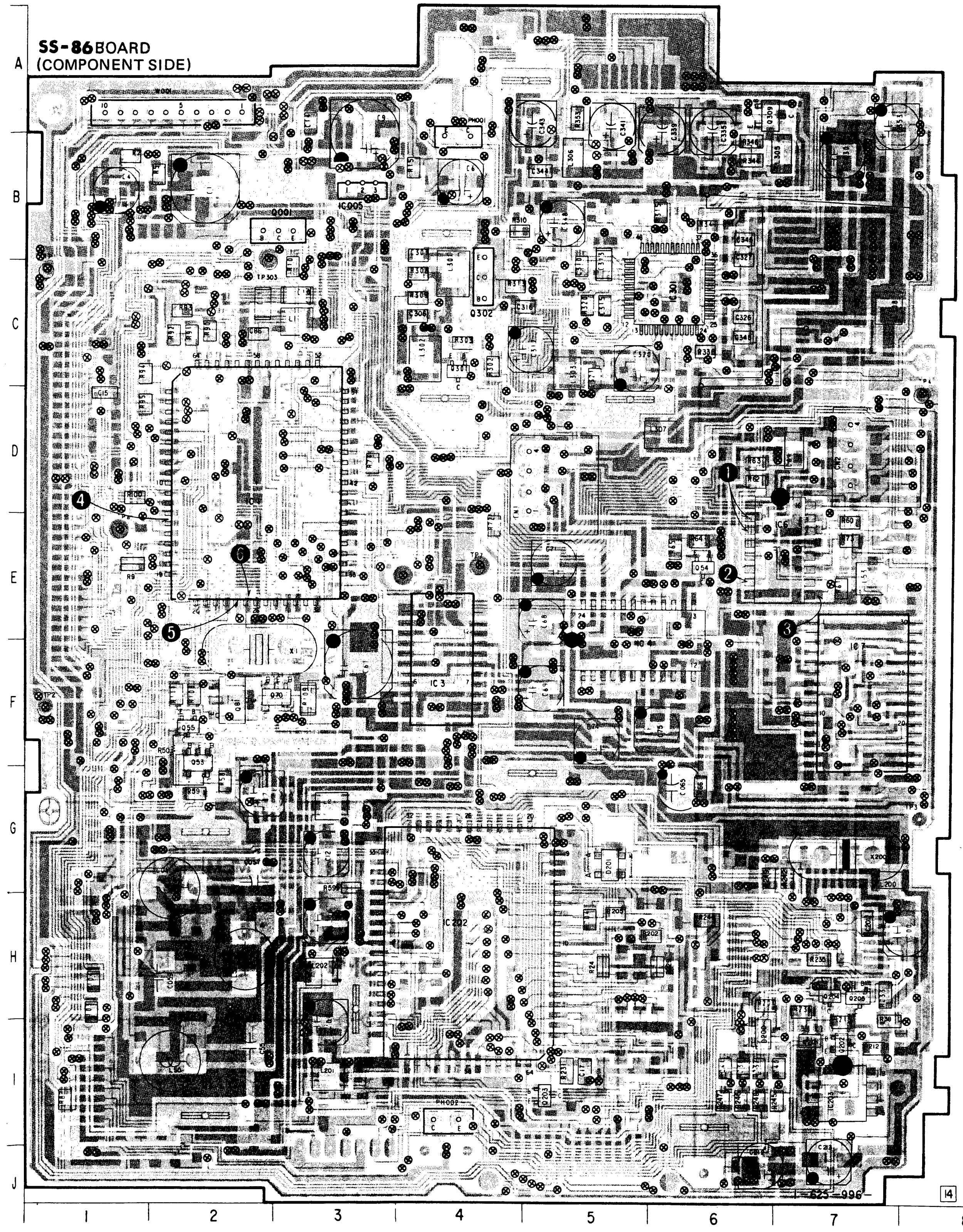

FP-118 (1/2)
IC007
CAPSTAN MOTOR DRIVE
IC007 CXA1127M
Q051
PWM POWER DRIVE
Q051 2SB1121
R052 270
R051 8.2k
C066 1
CAP (U)
CAP (V)
HE
VHE (+)
VHE (−)
CAP (W)
UHE (+)
UHE (−)
WHE (+)
WHE (−)
UNREG GND
C FG (−)
SS 5V
C FG (+)
SS GND
M902 CAPSTAN MOTOR
CAPSTAN FG
CAPSTAN MOTOR
SHAFT GND
MECHA DECK GND
D FG
D PG
D COM
GND
FG, PG
DRUM (U)
DRUM (V)
COM
DRUM (W)
M901 DRUM MOTOR
DRUM
W001 10P
CAM REC
CAM STBY
GND
TELE
WIDE
SS 5V
LINCS POWER
LINCS DC
EP OUT
EP GND
CN007 20P
VDD
TT
T2
MEMO
COLOR
LINCS POWER
AUTO LOCK SW
EVER 5V
CLK
DATA TO SLVE
DATA TO MSTR
SLVE RESET
CS
STB
REF Y (CAM)
CCDWN
CAM STBY
CAM REC
CAM STB
SS GND
TO FC-16 BOARD W190
(See page 127.)
W004 15P
EN
DATA TO SLVE
CLK
CAM STB
BACK LIGHT
VD
HD
TB
TG
TR
C BLK
GND
TY
Y BLK
A/D Y
TO VC-40 BOARD CN704
(See page 79.)
R103 10k
R104 10k
R087 10k
AUTO/MANU
CLK
DATA TO MSTR
CS
DATA TO SLVE
SLVE RESET
VDD
SS C 5V
AF ON
TALLY
SS GND
T1 IMPOSE
T2 IMPOSE
MEMO
COLOR
EVER 5V
LINCS POWER
UNREG GND
TELE
WIDE
BACK LIGHT
SS-86 BOARD (1/3)
DIGITAL TITLER BLOCK
(See page 97.)
U TELE
V WIDE
C015 0.033
Q008 SWITCH
Q008 2SA1576
L002 10μH
C012 22 6.3V
R021 2200
IC005
EVER 5V REG
C005 S81350AG
TP002
CN005 7P (WHT)
WIDE
TELE
SS GND
AF CONT
SS C 5V
AF UNREG
UNREG GND
TO AF BOARD CN4005
(See page 89.)
no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
CN930 10P (WHT)
CAM REC
CAMSTBY
SS GND
TELE
WIDE
SS 5V
LINCS POWER
LINCS DC
EP OUT
EP GND
S930
STAND BY
L930 1mH
J930
REMOTE
L932 1mH
J931
CHASSIS
CN931 3P (WHT)
TELE
SS GND
WIDE
REC START/STOP
S931
CN932 2P (WHT)
CAM REC
SS GND
TO MC-24 BOARD W586
(See page 107.)
SW-92 BOARD
ZM-8 BOARD
TELE
S970
W970
TELE
SS GND
WIDE
S971
WIDE

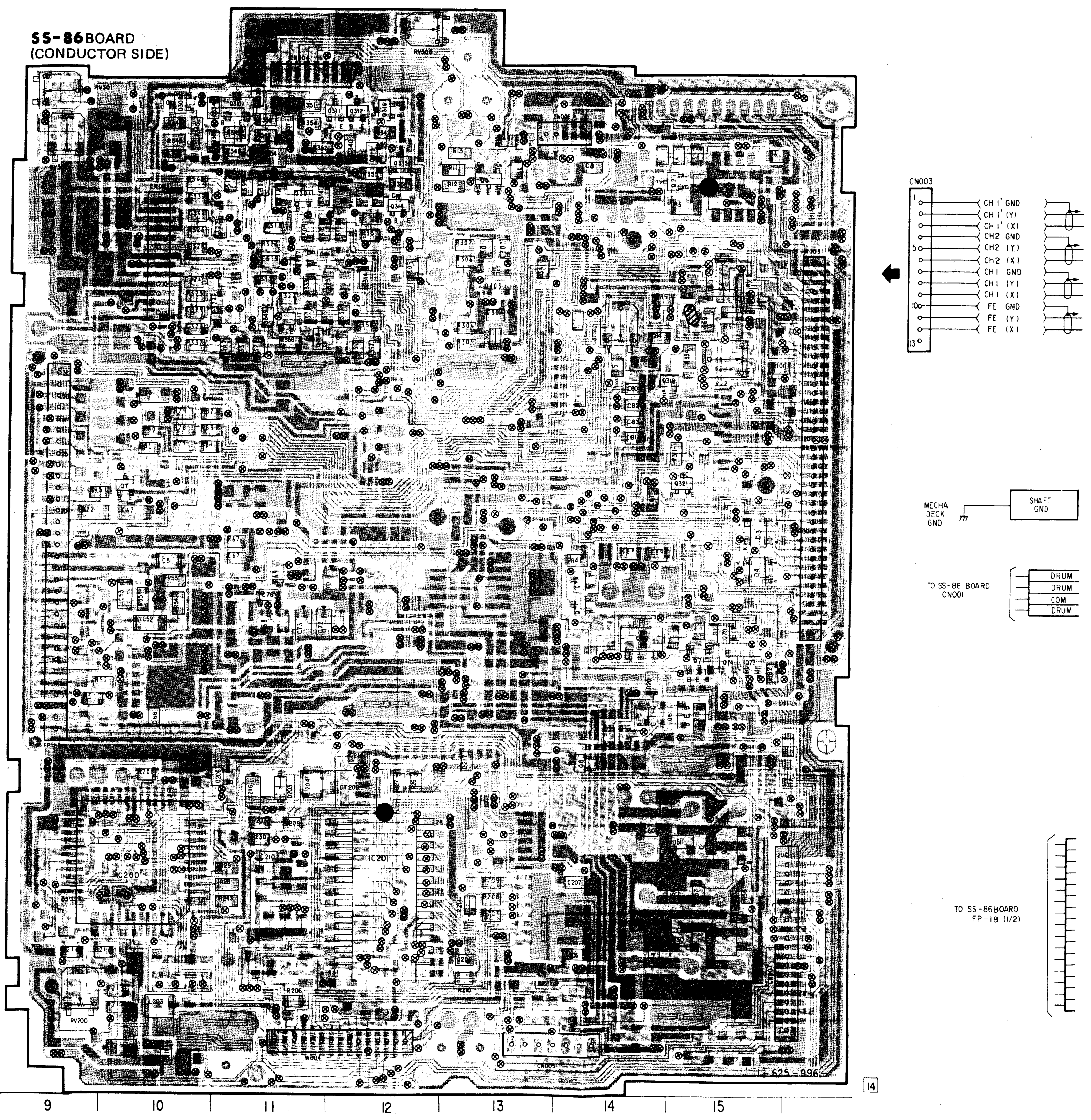
A
B
C
D
E
F
G
H
I
J
K
L
M

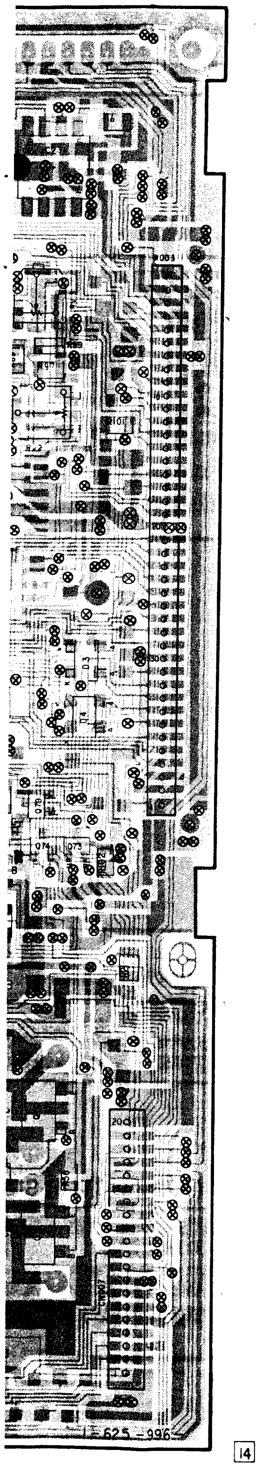
SERVO/SYSTEM CONTROL   SERVO/SYSTEM CONTROL

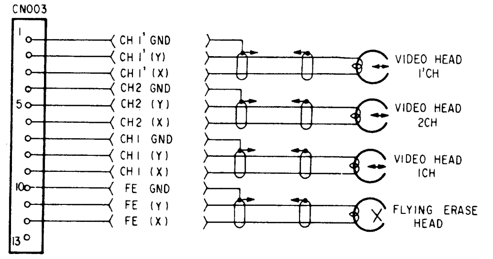
SS-86 (SYSTEM CONTROL, SERVO), SW-92 (START/STOP, STANDBY SWITCH, INPUT/OUTPUT JACK), ZM-8 (ZOOM SWITCH), PA-13 (POWER), CC-7 (MODE SWITCH), FP-53 (TAPE SELECT/CASSETTE IN SWITCH) PRINTED WIRING BOARDS

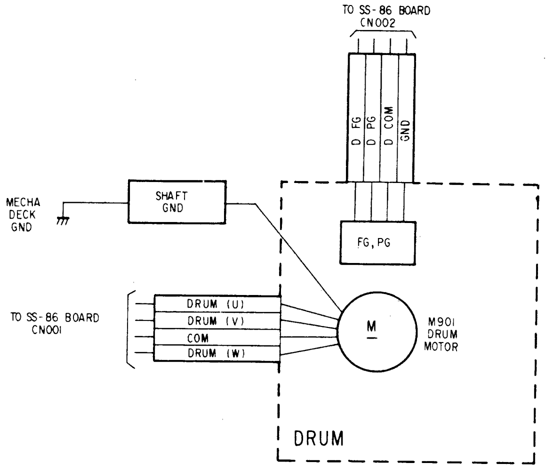
– Ref. No. SS-86 BOARD: 2,000 series, SW-92, ZM-8, PA-13, CC-7, FP-53 BOARDS: 3,000 series –

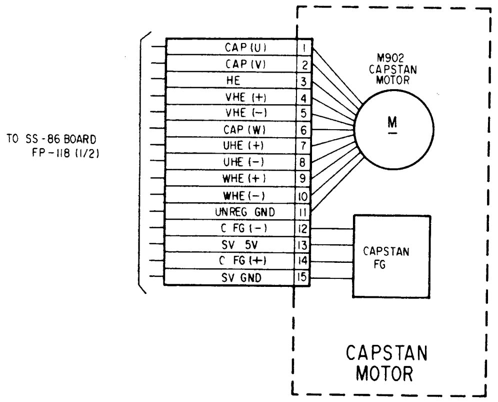

SS-86 BOARD
(COMPONENT SIDE)
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
1-625-996-
14


SS-86 BOARD
(CONDUCTOR SIDE)
9
10
11
12
13
14
15
1-625-996-
14
CN003
1
5
10
13
CH 1' GND
CH 1' (Y)
CH 1' (X)
CH2 GND
CH2 (Y)
CH2 (X)
CH1 GND
CH1 (Y)
CH1 (X)
FE GND
FE (Y)
FE (X)
MECHA DECK GND
SHAFT GND
TO SS-86 BOARD CN001
DRUM
DRUM
COM
DRUM
TO SS-86 BOARD FP-118 (1/2)

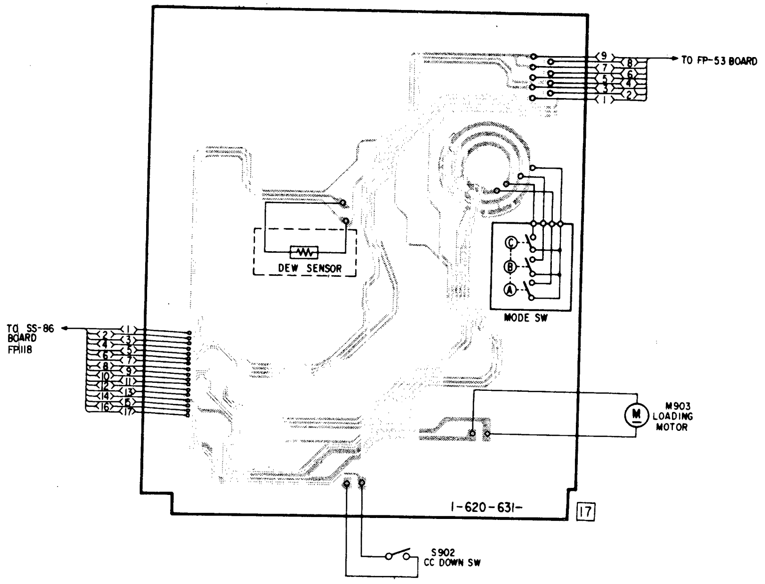

1-625-996-
14
15


CN003
CH 1' GND
CH 1' (Y)
CH 1' (X)
CH2 GND
CH2 (Y)
CH2 (X)
CH1 GND
CH1 (Y)
CH1 (X)
FE GND
FE (Y)
FE (X)
VIDEO HEAD 1'CH
VIDEO HEAD 2CH
VIDEO HEAD 1CH
FLYING ERASE HEAD

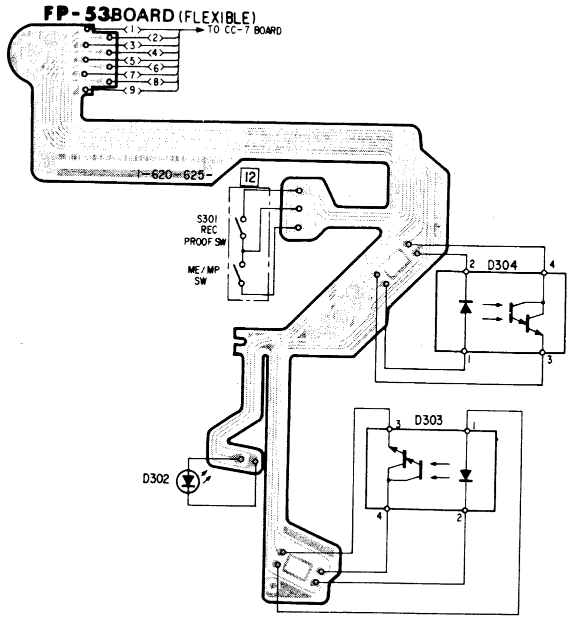

TO SS-86 BOARD CN002
D FG
D PG
D COM
GND
MECHA DECK GND
SHAFT GND
FG, PG
TO SS-86 BOARD CN001
DRUM (U)
DRUM (V)
COM
DRUM (W)
M
M901 DRUM MOTOR
DRUM


TO SS-86 BOARD FP-118 (1/2)
CAP (U)
CAP (V)
HE
VHE (+)
VHE (−)
CAP (W)
UHE (+)
UHE (−)
WHE (+)
WHE (−)
UNREG GND
C FG (−)
SV 5V
C FG (+)
SV GND
M902 CAPSTAN MOTOR
M
CAPSTAN FG
CAPSTAN MOTOR

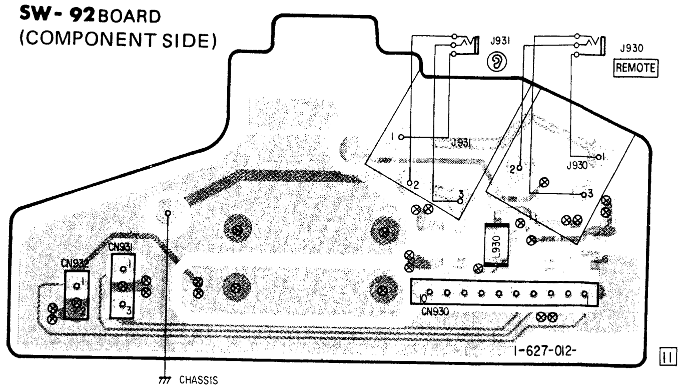
CC-7 BOARD


TO FP-53 BOARD
TO SS-86 BOARD FP118
DEW SENSOR
MODE SW
M903 LOADING MOTOR
1-620-631-
17
S902 CC DOWN SW

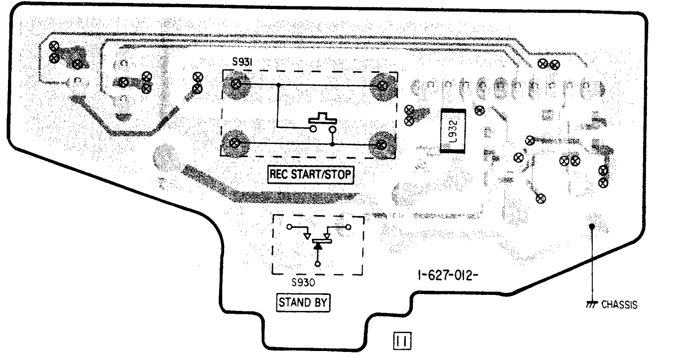
FP-53 BOARD (FLEXIBLE)

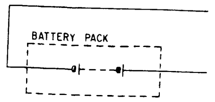

TO CC-7 BOARD
1-620-625-
12
S301 REC PROOF SW
ME/MP SW
D304
D303
D302

SW-92 BOARD
(COMPONENT SIDE)

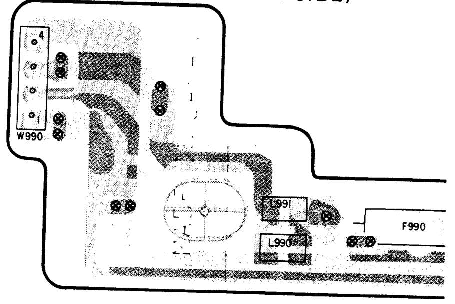

J931
J930
REMOTE
CN931
CN930
1-627-012-
11
CHASSIS

SW-92 BOARD (CONDUCTOR SIDE)

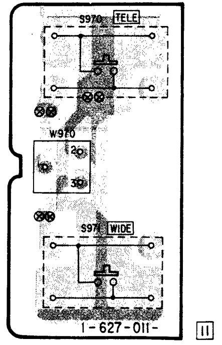

S931
L932
REC START/STOP
S930
STAND BY
1-627-012-
11
CHASSIS


BATTERY PACK

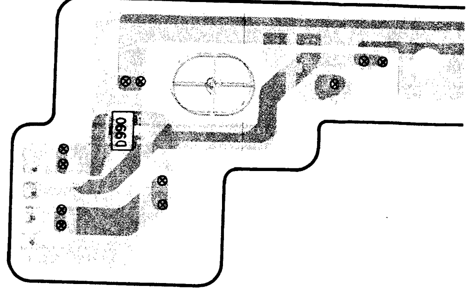
PA-13 BOARD (COMPONENT SIDE)


W990
L991
L990
F990

ZM-8 BOARD


S970 TELE
W970
S971 WIDE
1-627-011-
11

PA-13 BOARD (CONDUCTOR SIDE)



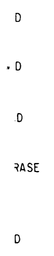
CN001	D-5
CN002	D-7
CN003	C-10
CN004	A-11
CN005	I-5
CN006	B-14
CN007	H-16
D001	I-14
D003	E-15
D004	F-15
D007	E-10
D008	I-14
D050	H-15
D051	H-14
D200	H-6
D201	G-5
D203	D-11
IC001	D-2
IC002	B-15
IC003	F-4
IC004	F-5
IC005	B-3
IC006	E-6
IC007	F-7
IC200	H-10
IC201	H-12
IC202	G-4
IC203	I-7
IC301	C-6
Q001	B-2
Q002	B-14
Q005	B-13
Q006	G-14
Q007	E-10
Q008	G-14
Q051	H-15
Q052	H-15
Q053	G-2
Q054	E-6
Q055	F-2
Q070	F-2
Q071	F-15
Q073	F-15
Q074	F-15
Q076	F-14
Q078	F-14
Q079	F-15
Q080	F-14
Q081	F-2
Q201	H-7
Q202	I-7
Q203	I-5
Q204	H-7
Q205	H-7
Q206	G-10
Q301	D-4
Q302	C-4
Q303	C-13
Q304	C-11
Q306	C-11
Q307	C-11
Q317	C-11
Q318	D-11
Q319	D-14
Q320	C-5
RV001	C-14
RV002	D-15
RV003	C-15
RV200	I-9
RV301	A-9
RV302	B-9
TP001	C-1
TP002	F-1
TP003	C-3
TP004	D-7
TP005	G-7
TP006	E-1
TP007	E-4
TP008	E-3

Note:
- ⊗ : Through hole.
- ▒ : Pattern of the rear side.

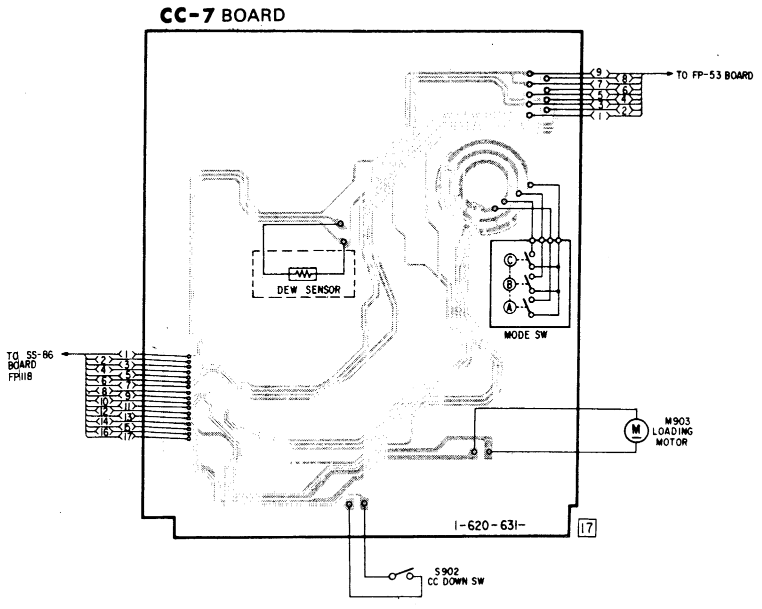
Caution:

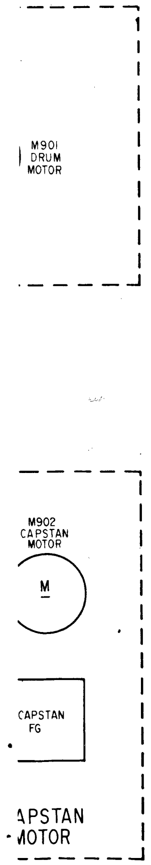
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

- Digital transistor (SS-86: Q007, Q055, Q071, Q073, Q074, Q076, Q078, Q079) is transistor with resistor. Refer to the SS-86 board schematic diagram for digital transistor.

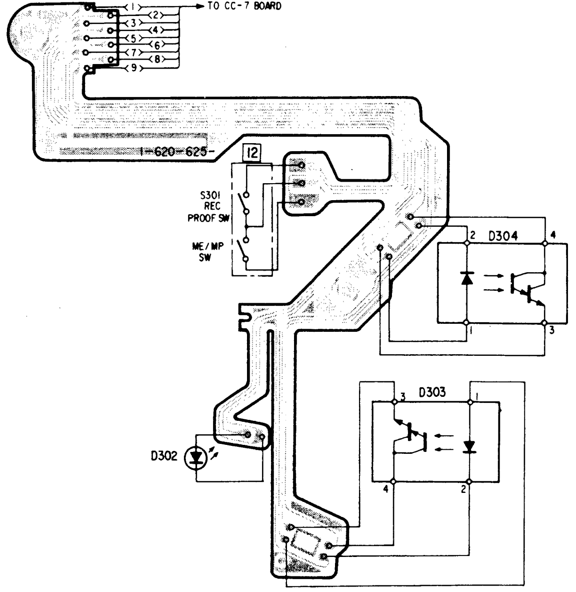


CC-7 BOARD


TO FP-53 BOARD
DEW SENSOR
MODE SW
TO SS-86 BOARD FP118
M903 LOADING MOTOR
1-620-631-
17
S902 CC DOWN SW

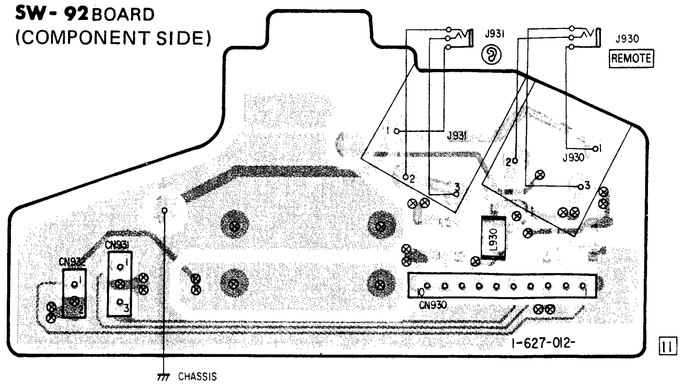

M901 DRUM MOTOR
M902 CAPSTAN MOTOR
M
CAPSTAN FG
APSTAN
MOTOR

FP-53 BOARD (FLEXIBLE)

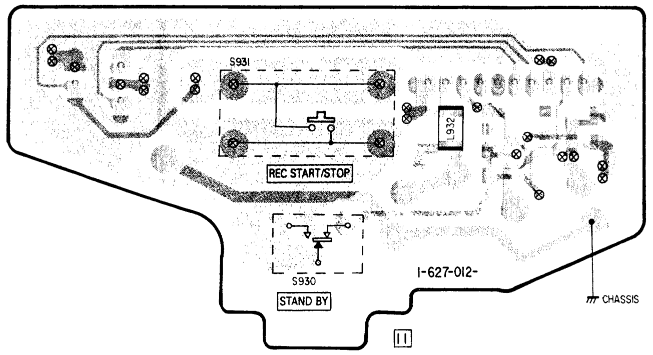

TO CC-7 BOARD
1-620-625-
12
S301 REC PROOF SW
ME/MP SW
D304
D303
D302

CN001	D·5
CN002	D·7
CN003	C·10
CN004	A·11
CN005	I·5
CN006	B·14
CN007	H·16
D001	I·14
D003	E·15
D004	F·15
D007	E·10
D008	I·14
D050	H·15
D051	H·14
D200	H·6
D201	G·5
D203	D·11
IC001	D·2
IC002	B·15
IC003	F·4
IC004	F·5
IC005	B·3
IC006	E·6
IC007	F·7
IC200	H·10
IC201	H·12
IC202	G·4
IC203	I·7
IC301	C·6
Q001	B·2
Q002	B·14
Q005	B·13
Q006	G·14
Q007	E·10
Q008	G·14
Q051	H·15
Q052	H·15
Q053	G·2
Q054	E·6
Q055	F·2
Q070	F·2
Q071	F·15
Q073	F·15
Q074	F·15
Q076	F·14
Q078	F·14
Q079	F·15
Q080	F·14
Q081	F·2
Q201	H·7
Q202	I·7
Q203	I·5
Q204	H·7
Q205	H·7
Q206	G·10
Q301	D·4
Q302	C·4
Q303	C·13
Q304	C·11
Q306	C·11
Q307	C·11
Q317	C·11
Q318	D·11
Q319	D·14
Q320	C·5
RV001	C·14
RV002	D·15
RV003	C·15
RV200	I·9
RV301	A·9
RV302	B·9
TP001	C·1
TP002	F·1
TP003	C·3
TP004	D·7
TP005	G·7
TP006	E·1
TP007	E·4
TP008	E·3

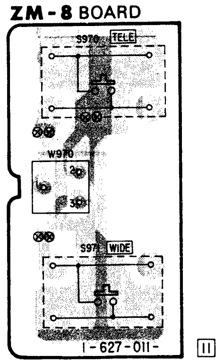
SW-92 BOARD
(COMPONENT SIDE)


J931
J930
REMOTE
CN931
CN930
1-627-012-
11
CHASSIS

SW-92 BOARD (CONDUCTOR SIDE)


S931
L932
REC START/STOP
S930
STAND BY
1-627-012-
11
CHASSIS

ZM-8 BOARD


S970
TELE
W970
S971
WIDE
1-627-011-
11

Note:

- ⊗ : Through hole.
- ▨ : Pattern of the rear side.

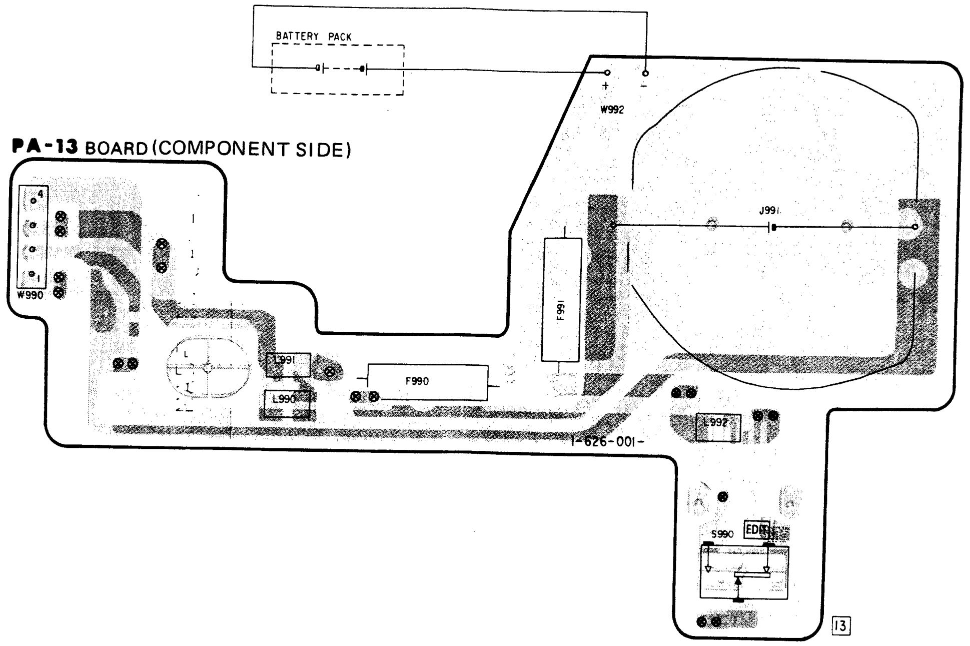
Caution:

Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.

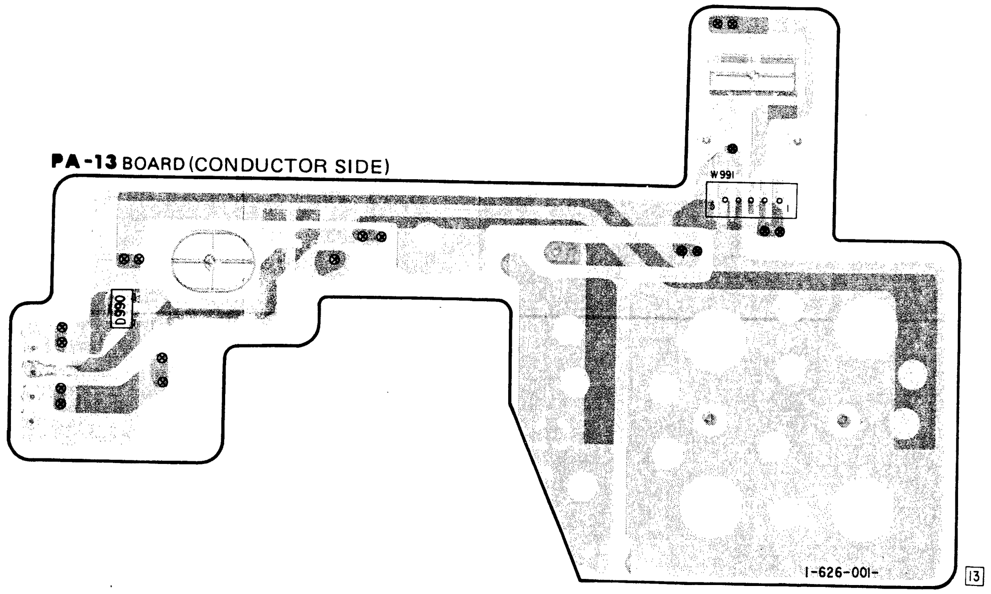
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

- Digital transistor (SS-86: Q007, Q055, Q071, Q073, Q074, Q076, Q078, Q079) is transistor with resistor. Refer to the SS-86 board schematic diagram for digital transistor.

PA-13 BOARD (COMPONENT SIDE)


BATTERY PACK
W992
J991
W990
F991
L991
L990
F990
L992
1-626-001-
S990
EDIT
13

PA-13 BOARD (CONDUCTOR SIDE)


W991
1-626-001-
13

4-7. FC-16 (MODE CONTROL), FV-1 (POWER SWITCH, VTR FUNCTION SWITCH), FD-6 (CAMERA DATA FUNCTION SWITCH), EJ-4 (EJECT SWITCH) PRINTED WIRING BOARDS

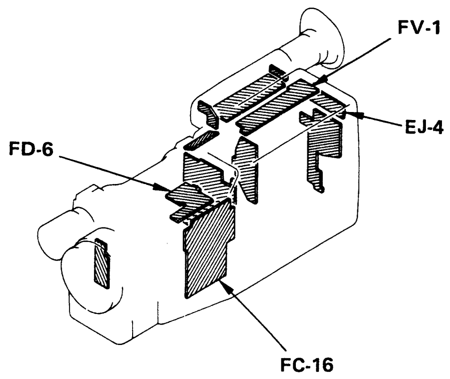
– Ref. No. FC-16, FV-1, FD-6, EJ-4 BOARDS: 4,000 series –

Note:

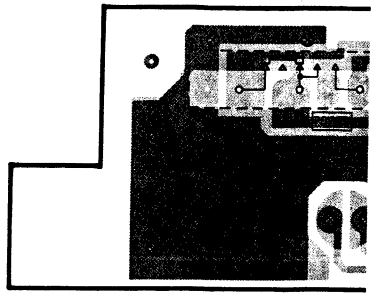
- ⊗ : Through hole.
- ▨ : Pattern of the rear side.

Caution:

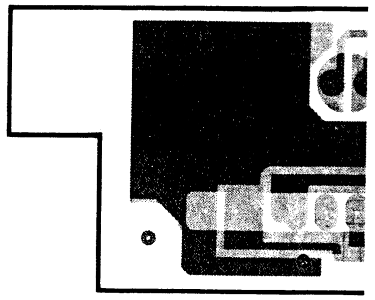
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.



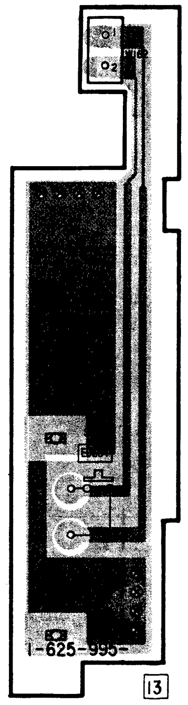
FV-1 BOARD (COMPOI



FV-1 BOARD (CONDUCTOR SI



EJ-4 BOARD
(COMPONENT SIDE)



122 - 123

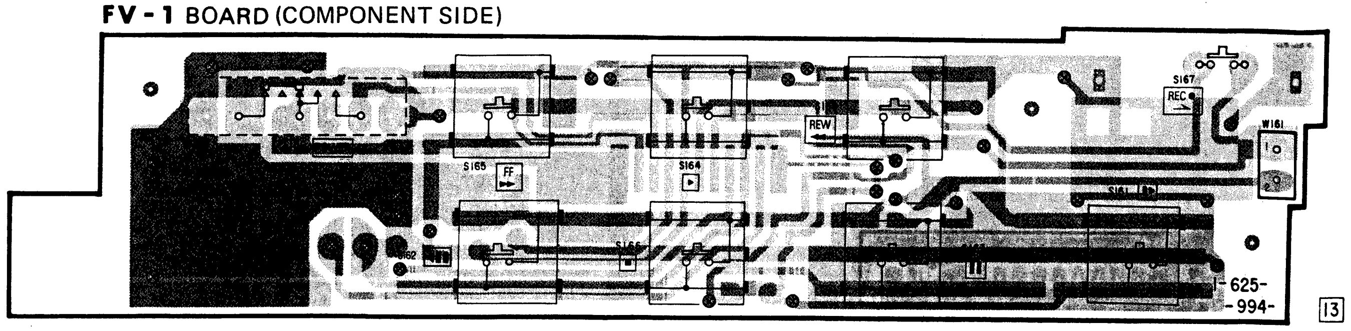
)N SWITCH),
ITCH),
NG BOARDS
,000 series –

de seen from
d.
le seen from

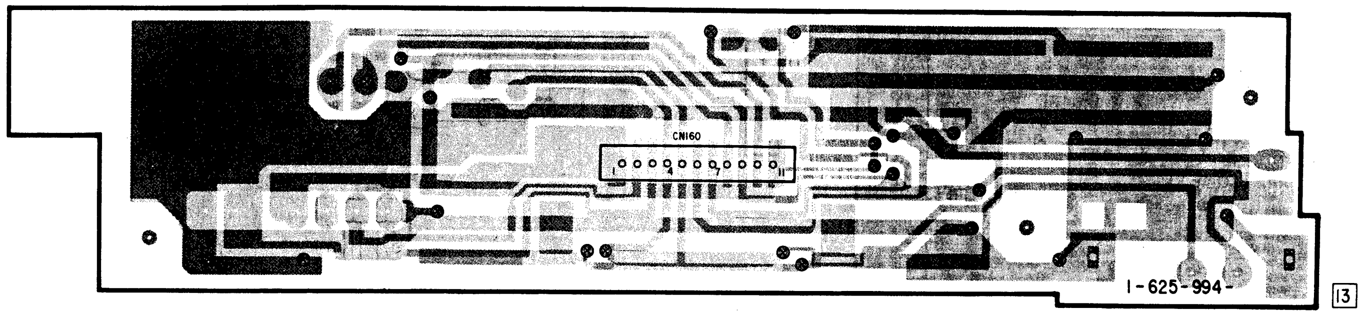
V-1

EJ-4

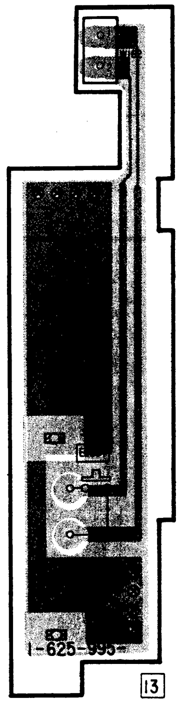
FV-1 BOARD (COMPONENT SIDE)


S167
REC
S165
FF
S164
REW
W161
S161
1-625-994-
13

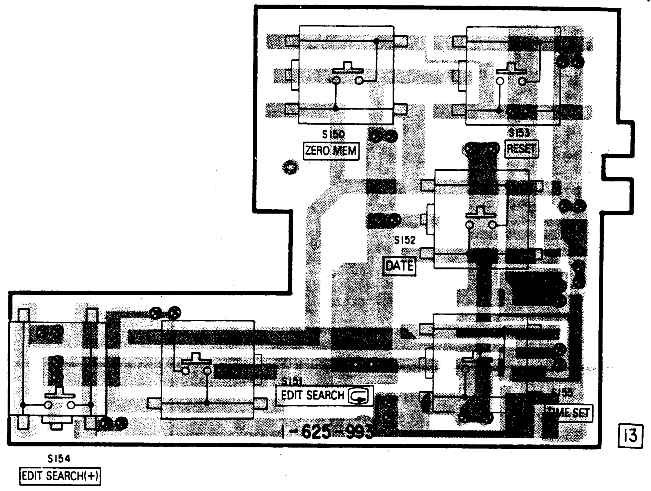
FV-1 BOARD (CONDUCTOR SIDE)


CN160
1-625-994-
13

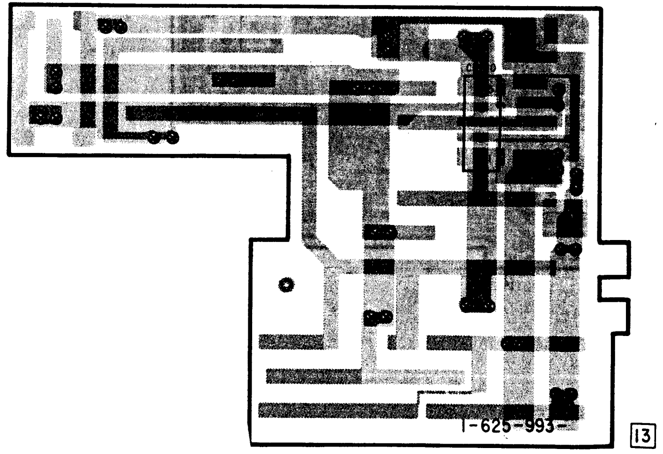
EJ-4 BOARD
(COMPONENT SIDE)



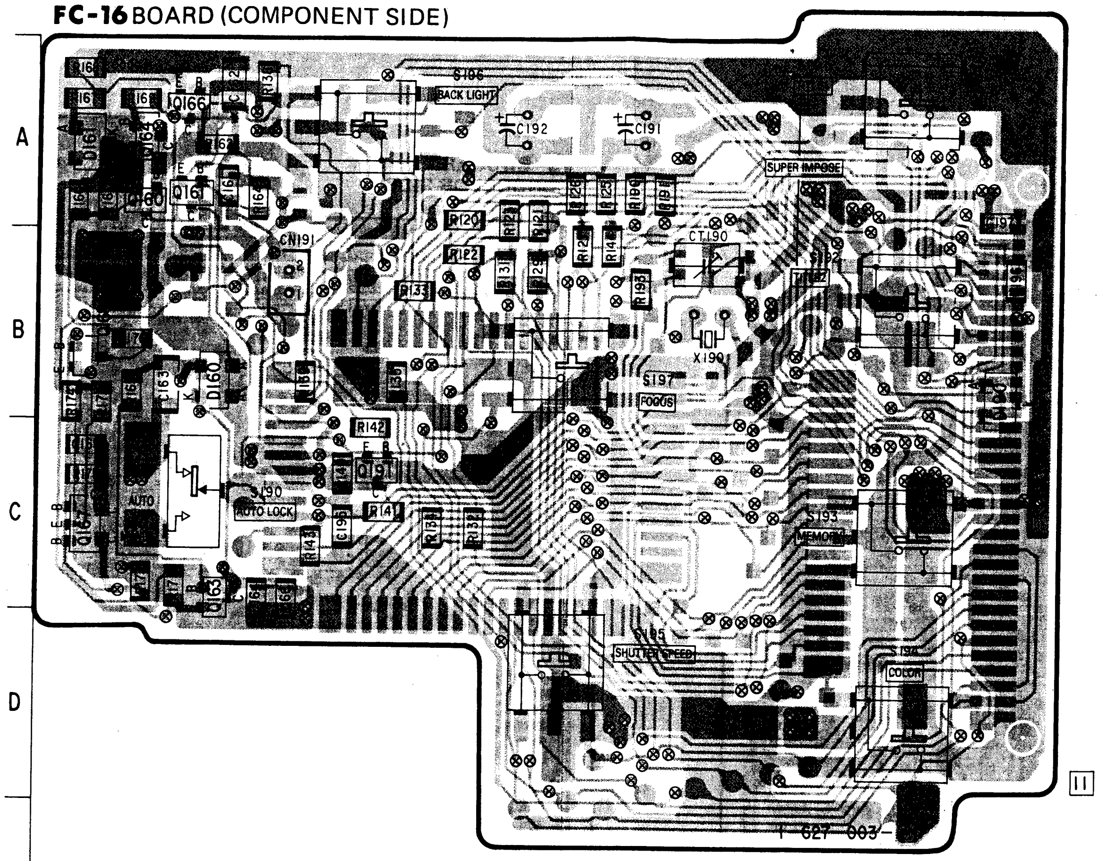
FD-6 BOARD (COMPONENT SIDE)


S150
ZERO MEM
S153
RESET
S152
DATE
S151
EDIT SEARCH
S155
TIME SET
1-625-993-
13
S154
EDIT SEARCH(+)

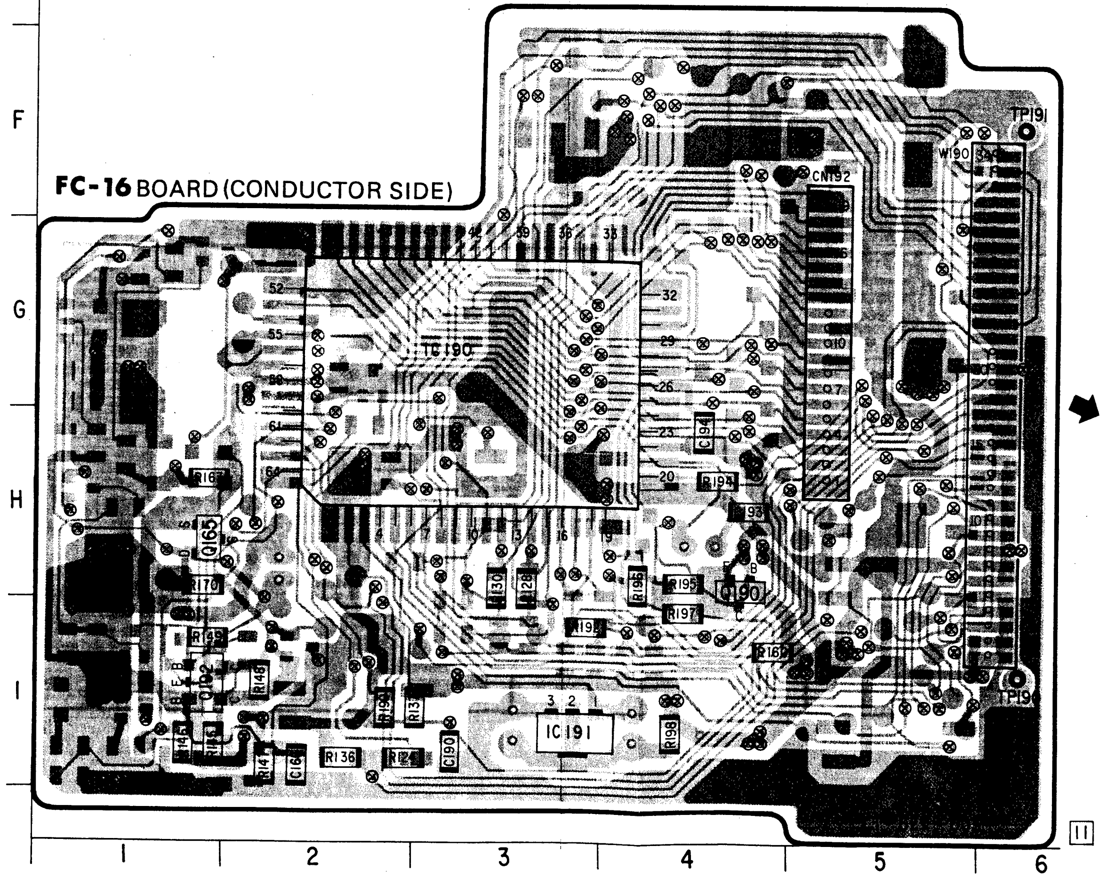
FD-6 BOARD (CONDUCTOR SIDE)

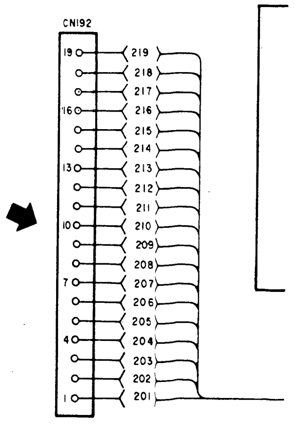


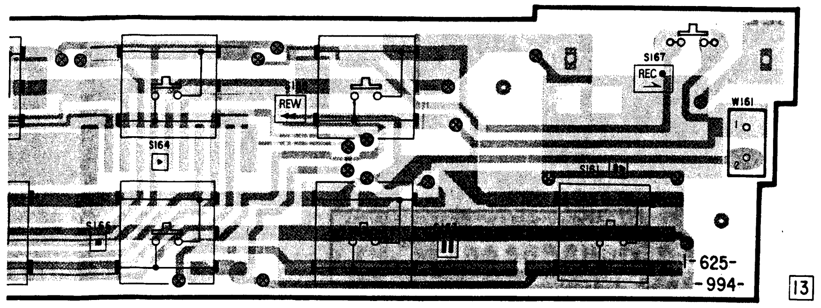
FC-16 BOARD (COMPONENT SIDE)

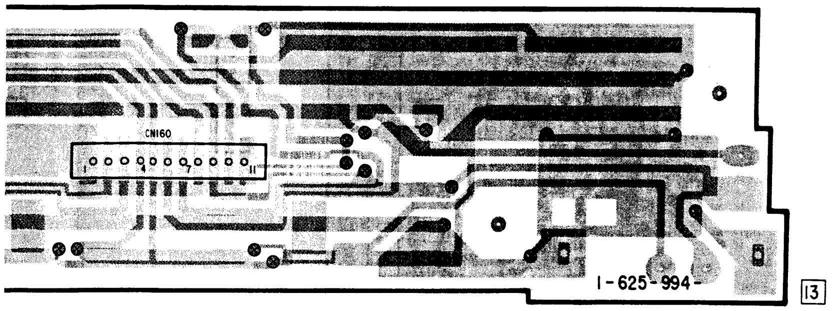

A
B
C
D
S196
BACK LIGHT
C192
C191
SUPER IMPOSE
CT190
X190
S197
FOCUS
S190
AUTO LOCK
S193
MEMORY
S195
SHUTTER SPEED
S194
COLOR
CN191
1-627-003-
11

FC-16 BOARD (CONDUCTOR SIDE)

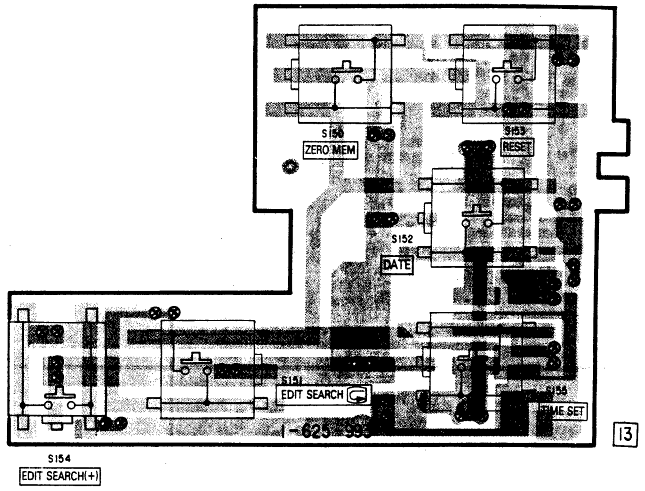

E
F
G
H
I
1
2
3
4
5
6
TP191
W190
CN192
IC190
IC191
TP190
11


CN192
19
16
13
10
7
4
1
219
218
217
216
215
214
213
212
211
210
209
208
207
206
205
204
203
202
201

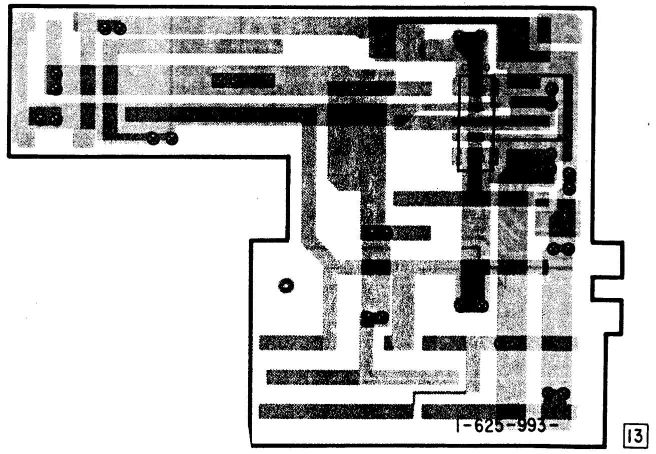

S167
REC
W161
REW
S164
S166
1-625-994-
13


CN160
1-625-994-
13

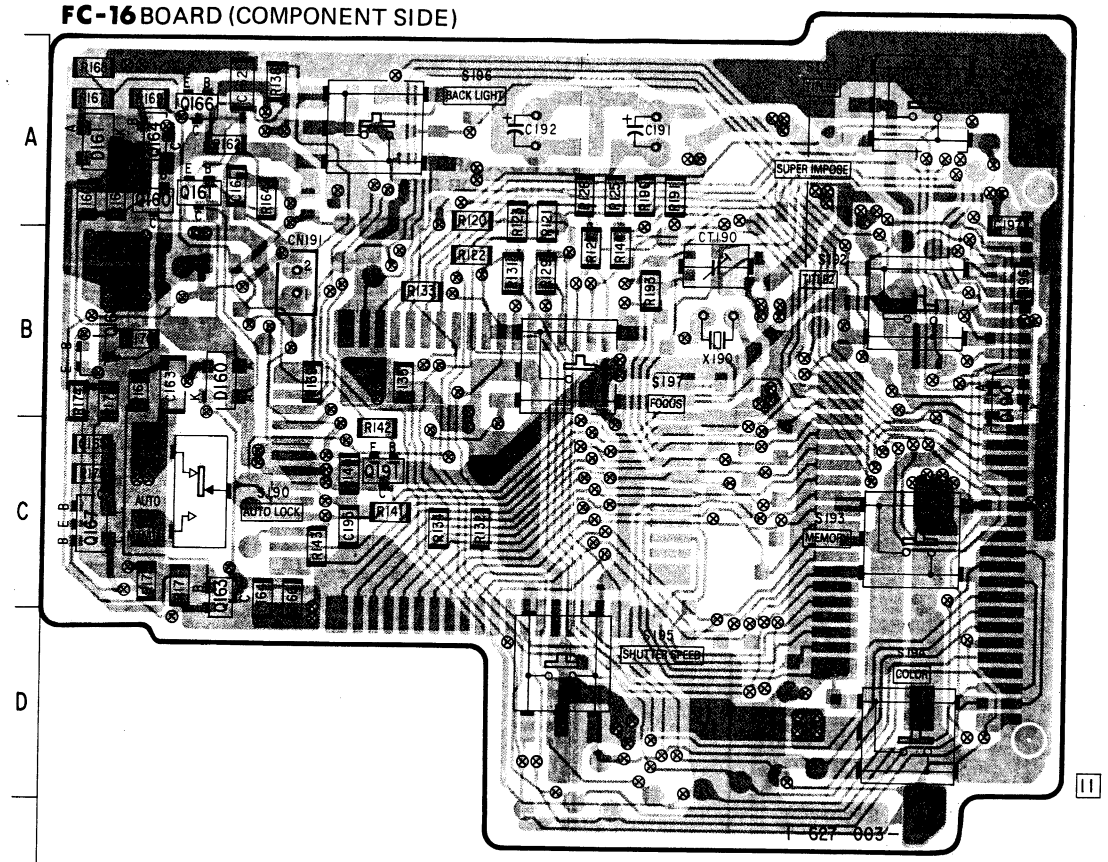
FD - 6 BOARD (COMPONENT SIDE)


S155
ZERO MEM
S153
RESET
S152
DATE
S151
EDIT SEARCH
S156
TIME SET
1-625-993
13
S154
EDIT SEARCH(+)

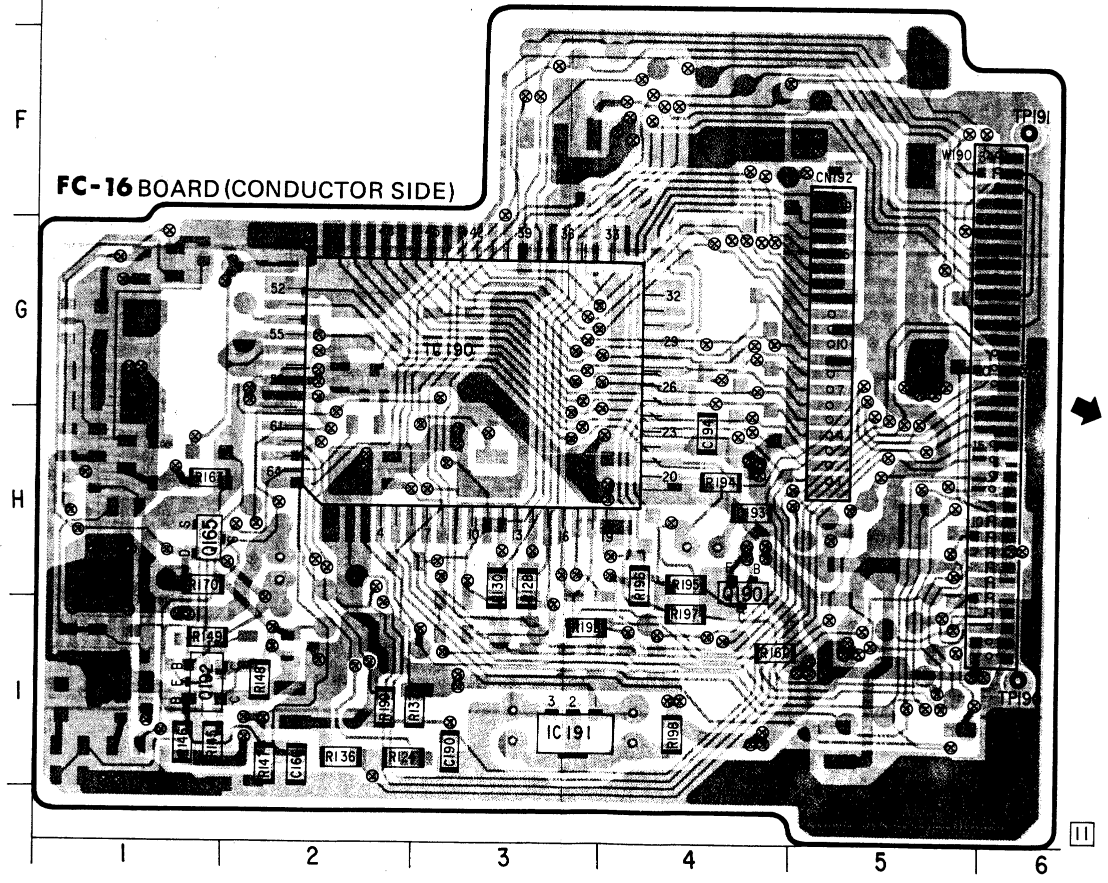
FD - 6 BOARD (CONDUCTOR SIDE)

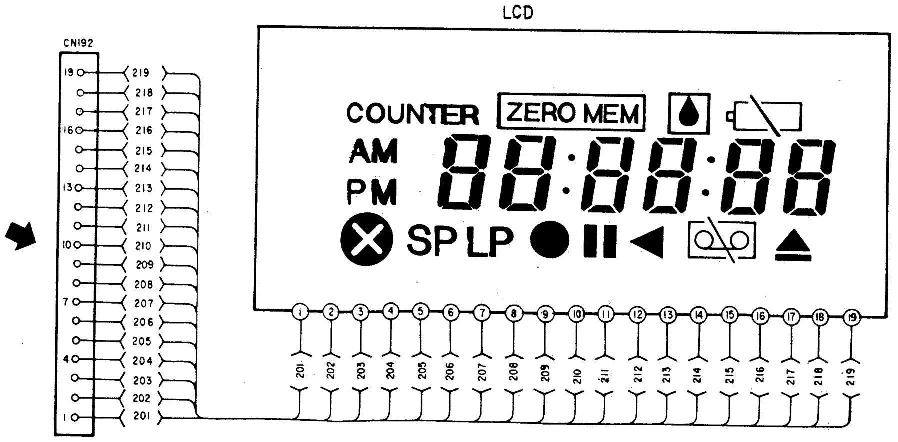


FC-16 BOARD (COMPONENT SIDE)


A
B
C
D
S186
BACK LIGHT
C192
C191
SUPER IMPOSE
CN191
CT190
X190
S197
FOCUS
S190
AUTO LOCK
AUTO
S193
MEMORY
S195
SHUTTER SPEED
COLOR
1-627-083-
11

FC-16 BOARD (CONDUCTOR SIDE)

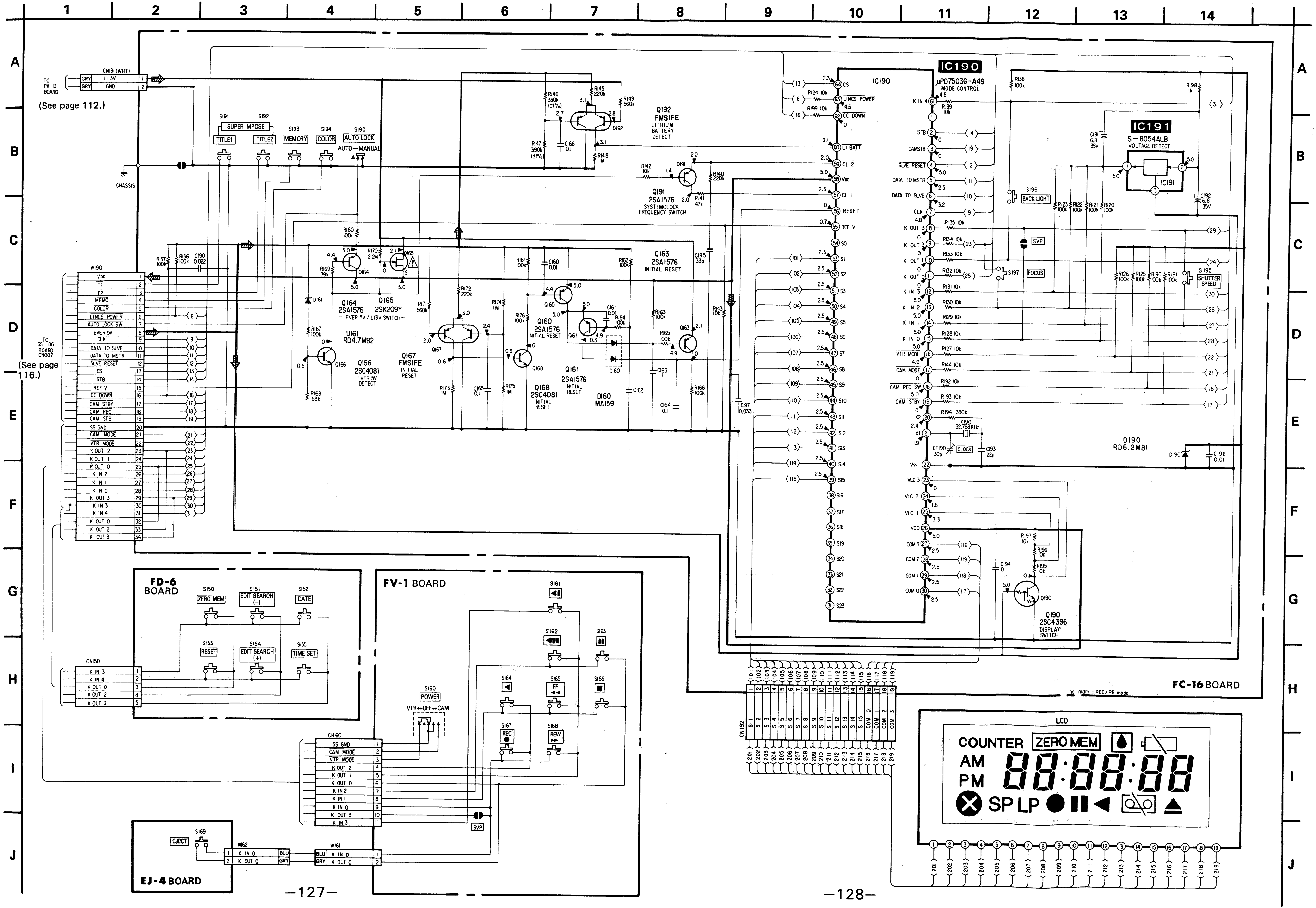

E
F
G
H
I
1
2
3
4
5
6
IC190
IC191
CN192
W190
TP191
TP190
R167
R170
R130
R128
R195
R197
R196
R198
R136
R149
C190
C194
11


CN192
LCD
COUNTER
ZERO MEM
AM
PM
88:88:88
SP LP

MODE CONTROL MODE CONTROL

FC-16 (MODE CONTROL), FV-1 (POWER SWITCH, VTR FUNCTION SWITCH), FD-6 (CAMERA DATA FUNCTION SWITCH), EJ-4 (EJECT SWITCH) SCHEMATIC DIAGRAM

– Ref. No. FC-16, FV-1, FD-6, EJ-4 BOARDS: 4,000 series –



1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
J
TO PA-13 BOARD
CN191 (WHT)
LI 3V
GND
(See page 112.)
CHASSIS
S191
SUPER IMPOSE
TITLE1
S192
TITLE2
S193
MEMORY
S194
COLOR
S190
AUTO LOCK
AUTO↔MANUAL
W190
TO SS-86 BOARD CN007
(See page 116.)
Q164
2SA1576
Q165
2SK209Y
– EVER 5V / LI3V SWITCH –
D161
RD4.7MB2
Q166
2SC4081
EVER 5V DETECT
Q167
FMS1FE
INITIAL RESET
Q160
2SA1576
INITIAL RESET
Q168
2SC4081
INITIAL RESET
Q161
2SA1576
INITIAL RESET
D160
MA159
Q163
2SA1576
INITIAL RESET
Q192
FMS1FE
LITHIUM BATTERY DETECT
Q191
2SA1576
SYSTEMCLOCK FREQUENCY SWITCH
IC190
μPD7503G-A49
MODE CONTROL
IC191
S-8054ALB
VOLTAGE DETECT
S196
BACK LIGHT
SVP
S197
FOCUS
S195
SHUTTER SPEED
X190
32.768KHz
CT190
CLOCK
D190
RD6.2MB1
Q190
2SC4396
DISPLAY SWITCH
FC-16 BOARD
no mark : REC/PB mode
CN192
FD-6 BOARD
S150
ZERO MEM
S151
EDIT SEARCH (–)
S152
DATE
S153
RESET
S154
EDIT SEARCH (+)
S155
TIME SET
CN150
FV-1 BOARD
S160
POWER
VTR↔OFF↔CAM
S161
S162
S163
S164
S165
FF
S166
S167
REC
S168
REW
CN160
EJ-4 BOARD
S169
EJECT
W162
W161
LCD
COUNTER
ZERO MEM
AM
PM
88:88:88
SP
LP

4-8. VF-13 (VIEWFINDER), TL-18 (LED), TL-19 (LED) PRINTED WIRING BOARDS

– Ref. No. VF-13, TL-18, TL-19 BOARDS: 5,000 series –

CN901	A-1
CN902	A-7
D903	F-1
IC901	A-5
Q902	B-6
Q903	E-5
Q904	E-2

Note:

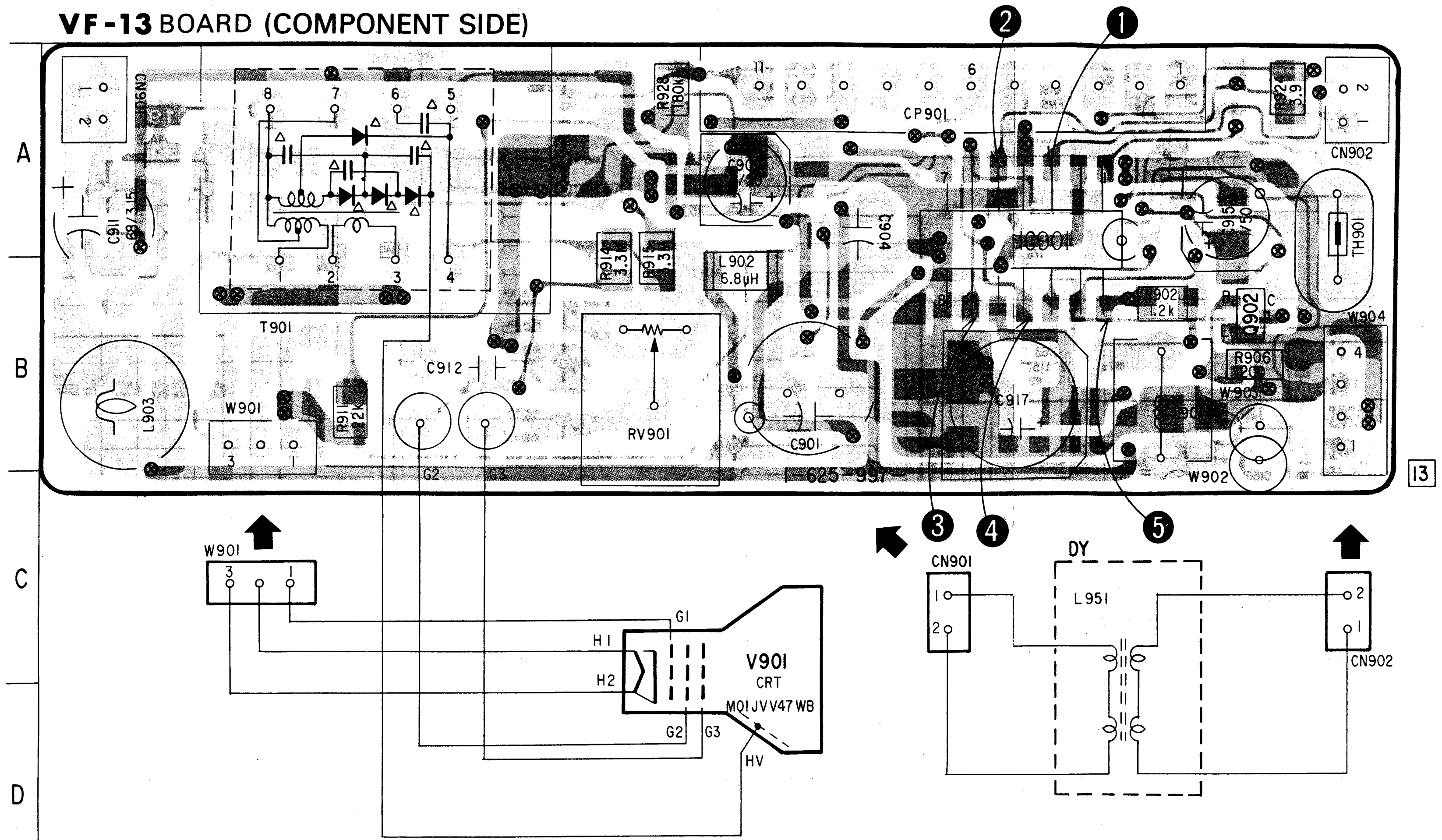
- ⊗ : Through hole.
- ▨ : Pattern of the rear side.

Caution:

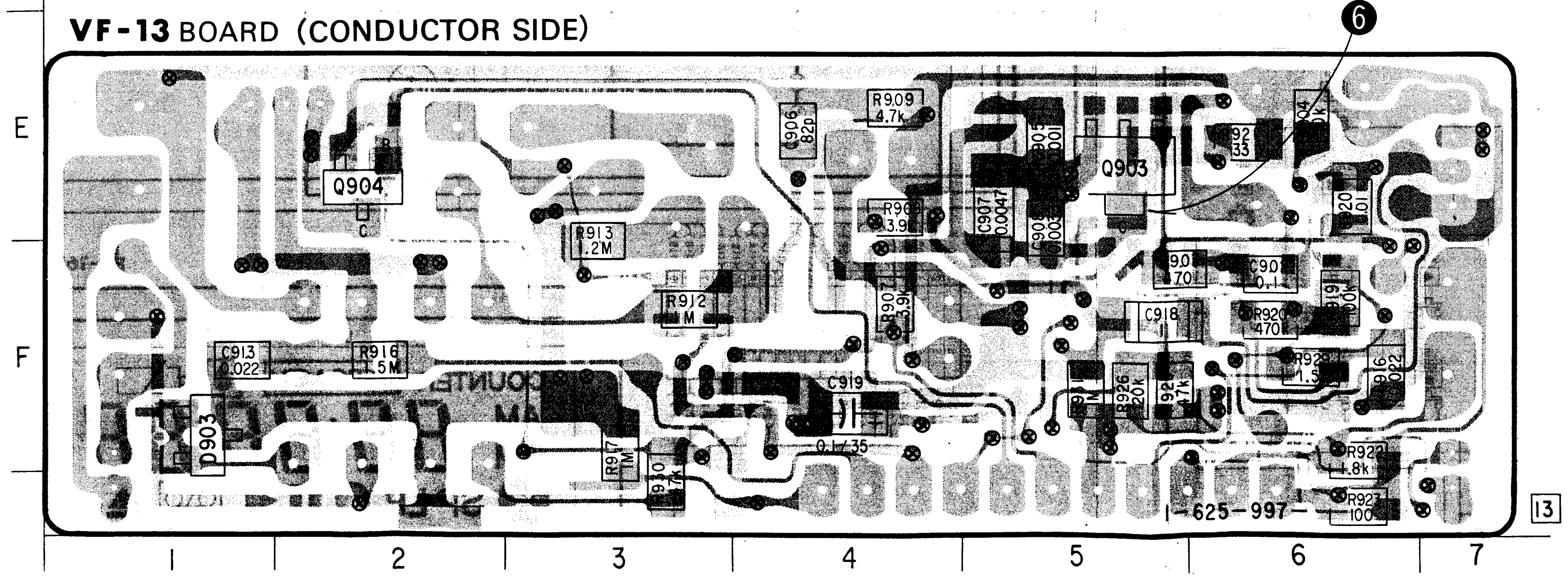
Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

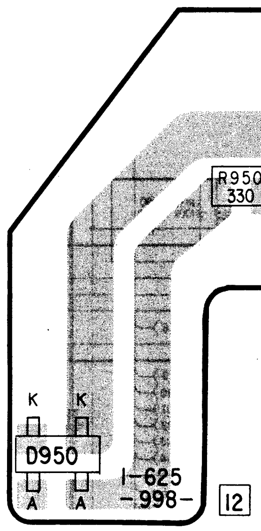
VF-13 BOARD (COMPONENT SIDE)


A
B
C
D
❶
❷
❸
❹
❺
CN901
CN902
T901
W901
L903
C911
68/3.15
C912
RV901
C901
C904
C917
IC901
L902
5.8μH
R914
3.3
R915
3.3
R911
12k
R928
180k
R924
3.9
CP901
TH901
Q902
R902
1.2k
R906
W903
W904
W902
G2
G3
1-625-997
13
DY
L951
V901
CRT
MQ1JVV47WB
G1
H1
H2
HV

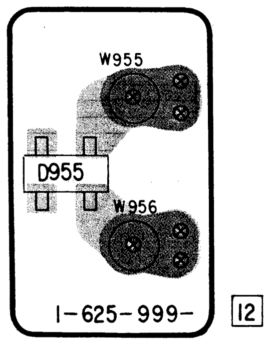
VF-13 BOARD (CONDUCTOR SIDE)


❻
E
F
1
2
3
4
5
6
7
Q904
Q903
D903
R909
4.7k
R906
82
R913
1.2M
R912
1M
R916
1.5M
C913
0.022
C919
0.1/35
R917
1M
R910
47k
R907
3.9
C907
0.0047
C918
R926
20k
R920
470
R922
1.8k
R923
100
1-625-997
13

TL-18 BOARD (COMPONENT SIDE)

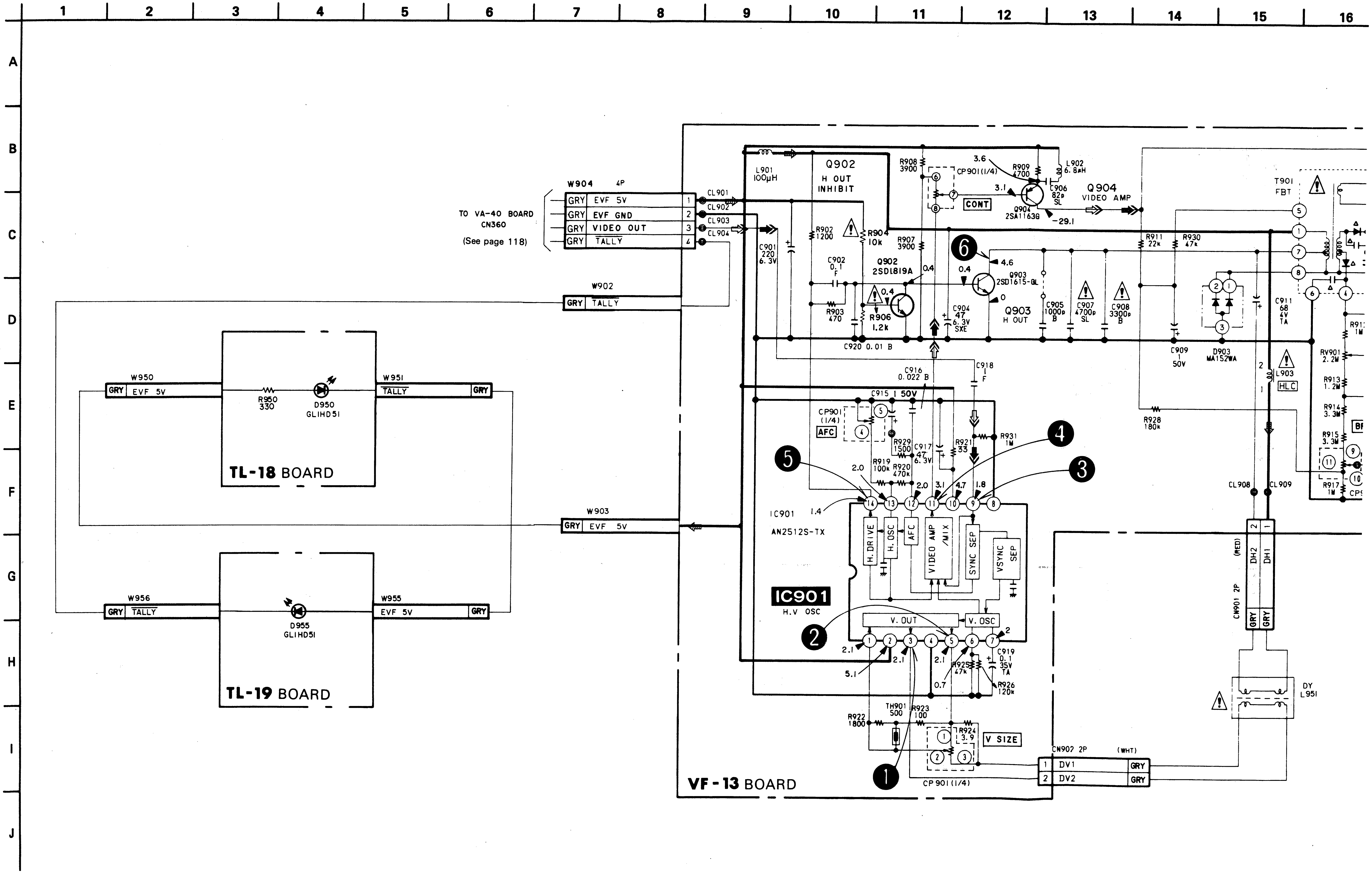

W951
W950
R950
330
D950
K
A
1-625
-998-
12

TL-19 BOARD (COMPONENT SIDE)

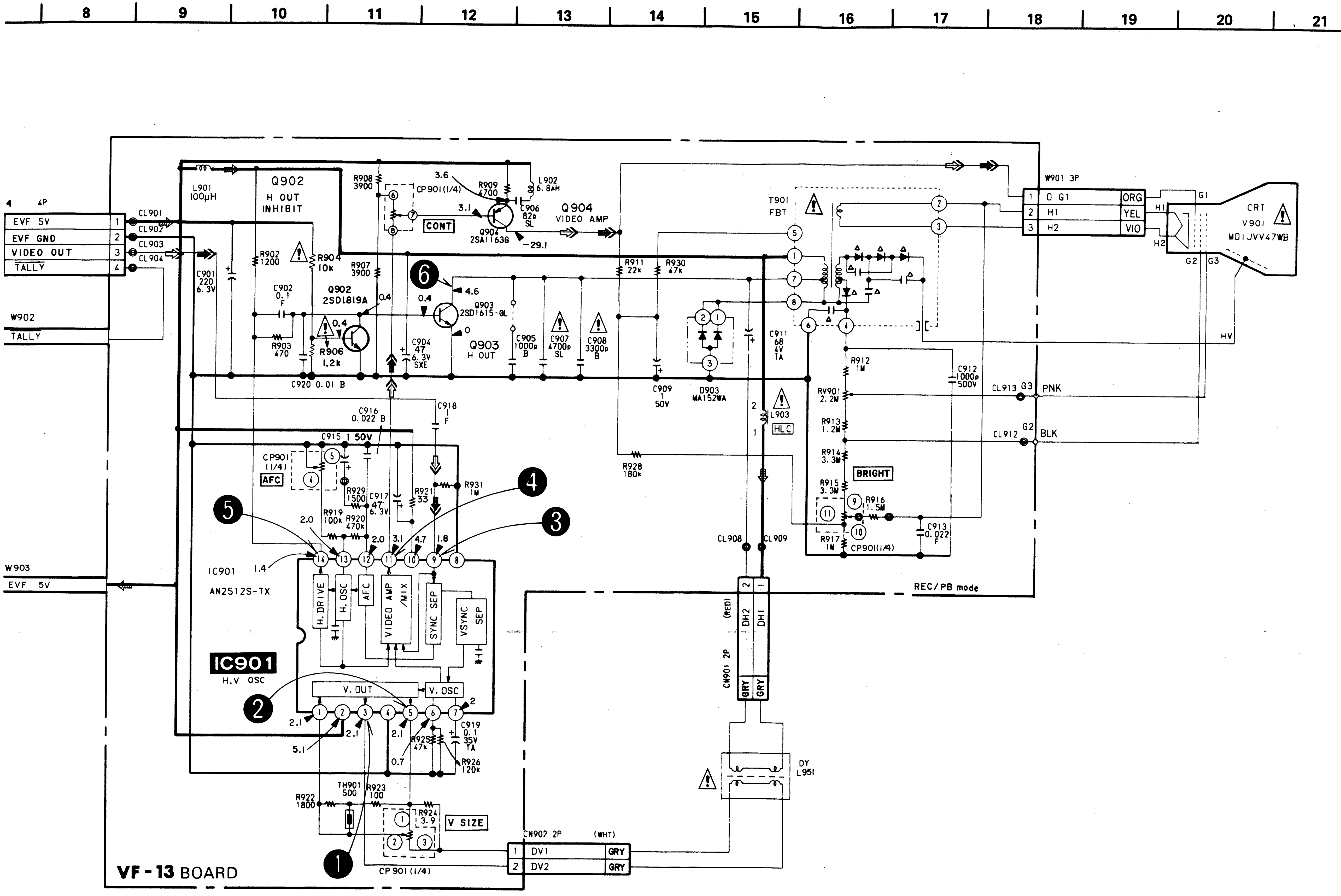

W955
W956
D955
1-625-999-
12

VF-13 (VIEWFINDER), TL-18 (LED), TL-19 (LED) SCHEMATIC DIAGRAM

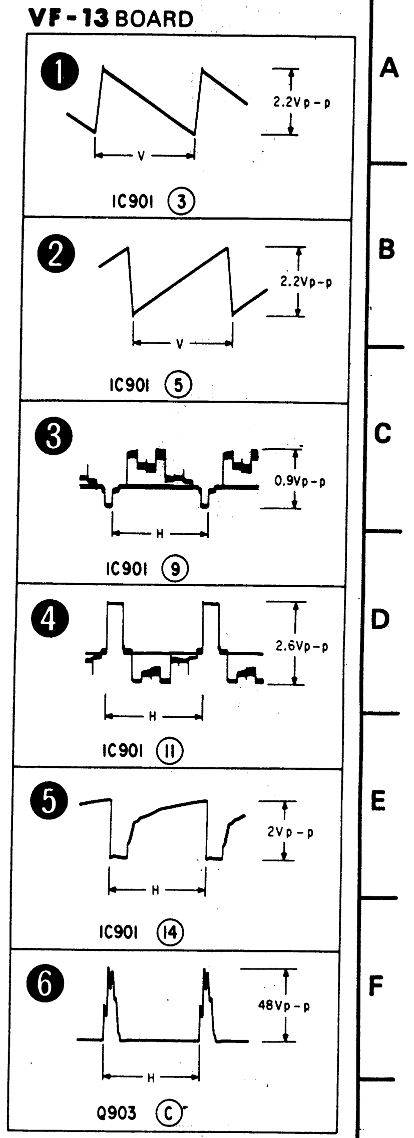
– Ref. No. VF-13, TL-18, TL-19 BOARDS: 5,000 series –



W904 4P
GRY EVF 5V
GRY EVF GND
GRY VIDEO OUT
GRY TALLY
TO VA-40 BOARD CN360
(See page 118)
CL901
CL902
CL903
CL904
W902
GRY TALLY
W950
GRY EVF 5V
R950 330
D950 GL1HD51
W951
TALLY GRY
TL-18 BOARD
W903
GRY EVF 5V
W956
GRY TALLY
D955 GL1HD51
W955
EVF 5V GRY
TL-19 BOARD
L901 100μH
Q902 H OUT INHIBIT
R902 1200
R904 10k
C901 220 6.3V
C902 0.1 F
R903 470
R906 1.2k
Q902 2SD1819A
C920 0.01 B
R908 3900
CP901(1/4)
CONT
R907 3900
R909 4700
L902 6.8μH
C906 82p SL
Q904 2SA1163G
Q904 VIDEO AMP
3.6
3.1
-29.1
4.6
0.4
0
Q903 2SD1615-GL
Q903 H OUT
C904 47 6.3V SXE
C905 1000p B
C907 4700p SL
C908 3300p B
R911 22k
R930 47k
T901 FBT
C909 1 50V
D903 MA152WA
C911 68 4V TA
L903 HLC
R928 180k
RV901 2.2M
R913 1.2M
R914 3.3M
R915 3.3M
R917 1M
CL908
CL909
CN901 2P (RED)
DH2
DH1
DY L951
C916 0.022 B
C918 1 F
C915 1 50V
CP901 (1/4) AFC
R929 1500
C917 47 6.3V
R921 33
R931 1M
R919 100k
R920 470k
2.0
1.4
3.1
4.7
1.8
IC901 AN2512S-TX
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
IC901 H.V OSC
V.OUT
V.OSC
2.1
5.1
0.7
C919 0.1 35V TA
R925 47k
R926 120k
R922 1800
TH901 500
R923 100
R924 3.9
V SIZE
CP901(1/4)
CN902 2P (WHT)
DV1 GRY
DV2 GRY
VF-13 BOARD


8
9
10
11
12
13
14
15
16
17
18
19
20
21
4 4P
EVF 5V
EVF GND
VIDEO OUT
TALLY
CL901
CL902
CL903
CL904
W902
TALLY
W903
EVF 5V
L901 100μH
Q902
H OUT INHIBIT
R902 1200
R904 10k
C901 220 6.3V
C902 0.1 F
R903 470
R906 1.2k
Q902 2SD1819A
0.4
R907 3900
R908 3900
CP901(1/4)
CONT
3.6
3.1
R909 4700
L902 6.8μH
C906 82p SL
Q904 2SA1163G
-29.1
Q904 VIDEO AMP
4.6
0.4
Q903 2SD1615-GL
0
Q903 H OUT
C904 47 6.3V SXE
C920 0.01 B
C905 1000p B
C907 4700p SL
C908 3300p B
R911 22k
R930 47k
C909 1 50V
D903 MA152WA
C911 68 4V TA
T901 FBT
L903 HLC
R928 180k
R912 1M
RV901 2.2M
R913 1.2M
R914 3.3M
BRIGHT
R915 3.3M
R916 1.5M
R917 1M
CP901(1/4)
C912 1000p 500V
C913 0.022 F
CL913 G3 PNK
CL912 G2 BLK
W901 3P
1 O G1 ORG
2 H1 YEL
3 H2 VIO
CRT V901 M01JVV47WB
G1
H1
H2
G2
G3
HV
REC/PB mode
CL908
CL909
CN901 2P (RED)
2 DH2 GRY
1 DH1 GRY
DY L951
C916 0.022 B
C918 1 F
C915 1 50V
CP901 (1/4)
AFC
R929 1500
R919 100k
R920 470k
C917 47 6.3V
R921 33
R931 1M
2.0
2.0
3.1
4.7
1.8
1.4
IC901 AN2512S-TX
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
IC901
H.V OSC
2.1
2.1
5.1
2.1
0.7
2
C919 0.1 35V TA
R925 47k
R926 120k
R922 1800
TH901 500
R923 100
R924 3.9
V SIZE
CP901(1/4)
CN902 2P (WHT)
1 DV1 GRY
2 DV2 GRY
VF-13 BOARD

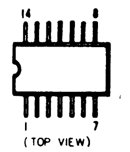
VF-13 BOARD



Note:
- Signal path
  - ➡ : REC Y/CHROMA Signal
  - ⇨ : PB Y/CHROMA Signal

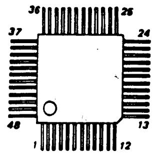
4-9. SEMICONDUCTORS

AN2512S
μPD4066BG



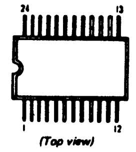
14
8
1
7
(TOP VIEW)

CXA1202R



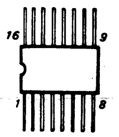
36
25
37
24
48
13
1
12

CX20114

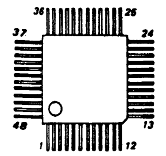


24
13
1
12
(Top view)

CX20115A
TC4053BF
μPD6142G-101

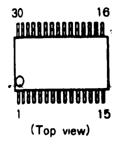


CXA1072R



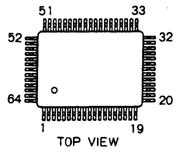
36
25
37
24
48
13
1
12

CXA1127MTP-1
CXL1501M



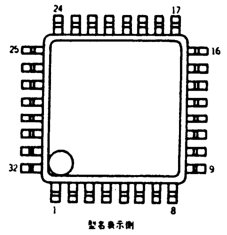
30
16
1
15
(Top view)

CXA1200Q
MB670493
μPD7503G-A49
μPD78112GF-510



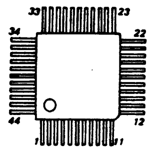
51
33
52
32
64
20
1
19
TOP VIEW

CXA1201Q



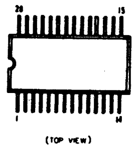
24
17
25
16
32
9
1
8
型名表示側

CXA1204Q
μPD7507HG-532-22



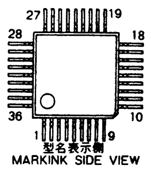
33
23
34
22
44
12
1
11

CXK58256MF-12LL



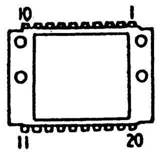
28
15
1
14
(TOP VIEW)

CXD1159Q

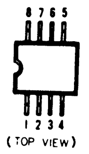


27
19
28
18
36
10
1
9
型名表示側
MARKINK SIDE VIEW

ICX026AK

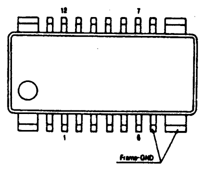


LA7293
MC34182MR
NJM2233AM
NJM3414M
μPC358G2
μPC393G2

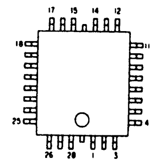


8 7 6 5
1 2 3 4
(TOP VIEW)

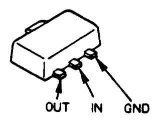
LB1631M



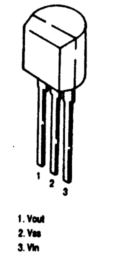
MC146805F2FPSC8253-3F



S-8054ALB-LM-S

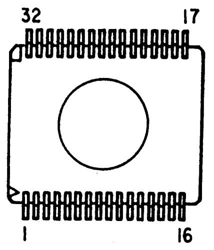


S-81350AG

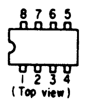


1
2
3
1.Vout
2.Vss
3.Vin

SBX1505

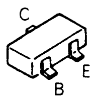


μPC311G2

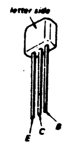


8 7 6 5
1 2 3 4
(Top view)

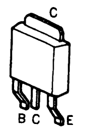
2SA812-M6
2SA1163
2SA1226
2SA1576R
2SA1676
2SA1677
2SC1623
2SC2223-F13
2SC3395
2SC4081R
2SC4396
2SC4397
DTA124EU
DTA143EU
DTA144EU
DTC124EU
DTC144EU



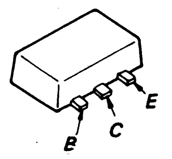
2SA1175



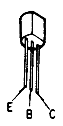
2SA1341



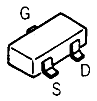
2SA1416-S-TD
2SB798
2SB1121-T
2SC3646-S-TD
2SD1615



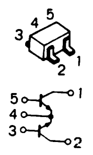
2SB926



2SK94-X2
2SK300

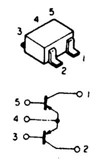


FMG2
FMW1
XN1213
XN1501



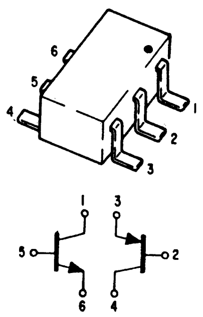
5
4
3
2
1
5
4
3
1
2

FMS1FE
XN1113



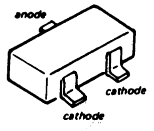
4
5
3
1
2
5
4
3
1
2

XN4601



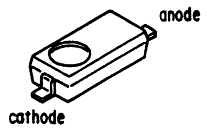
6
5
4
1
2
3
1
3
5
2
6
4

1S2835
MA141WA
MA151WA
MA152WA



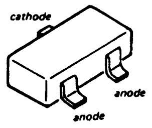
anode
cathode
cathode

1T33C-01



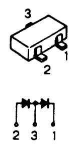
anode
cathode

1S2837

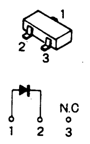


cathode
anode
anode

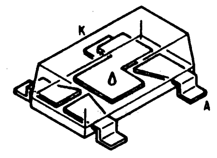
1SS123



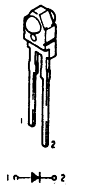
1SS187



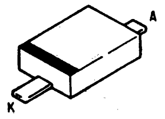
GL1HD51



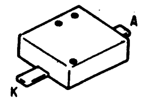
GL452S



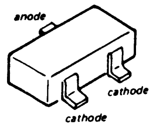
MA110



MA111

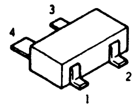


MA141WK



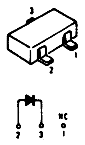
anode
cathode
cathode

MA159

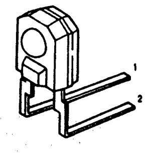


1. cathode
2. cathode
3. anode
4. anode

RD2.4M-B
RD4.7M-B2
RD6.2M-B1
RD9.1M-B1
SB05-05CP

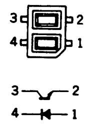


PT480FI



1. Emitter
2. Collector

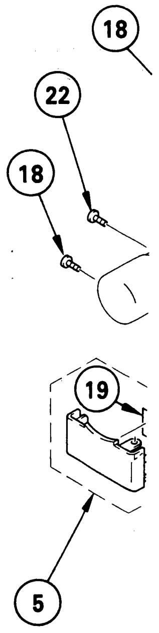
TLP907-0



NOTE:

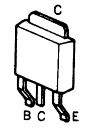
- The mecha
number in
supplied.
- The constr
part are
number in

5-1. RIGHT

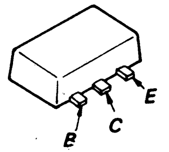


No.	Pa
1	X-
2	X-
3	X-
4	3-
5	X-
6	X-
7	*3-
8	3-
9	*3-
10	*3-
11	3-
12	*3-

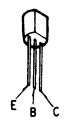
2SA1341



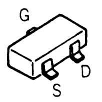
2SA1416-S-TD
2SB798
2SB1121-T
2SC3646-S-TD
2SD1615



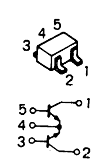
2SB926



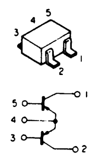
2SK94-X2
2SK300



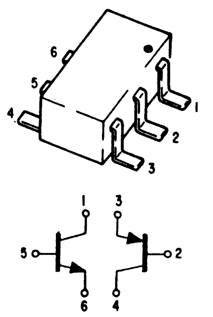
FMG2
FMW1
XN1213
XN1501


3 4 5
2 1
5 4 3 1 2

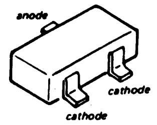
FMS1FE
XN1113


3 4 5
2 1
5 4 3 1 2

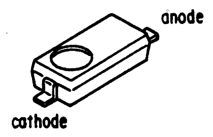
XN4601


6 5 4
1 2 3
1 3
5 2
6 4

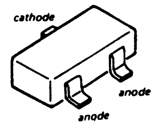
1S2835
MA141WA
MA151WA
MA152WA


anode
cathode
cathode

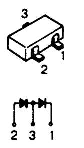
1T33C-01


anode
cathode

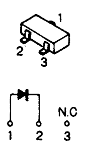
1S2837


cathode
anode
anode

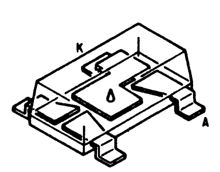
1SS123



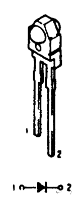
1SS187



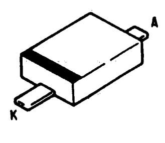
GL1HD51



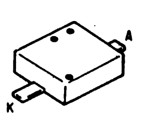
GL452S



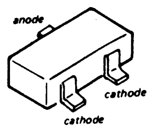
MA110



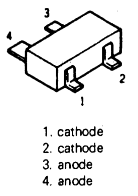
MA111



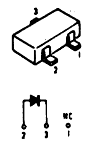
MA141WK


anode
cathode
cathode

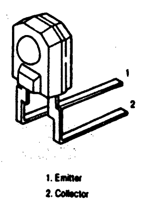
MA159


3
4
2
1
1. cathode
2. cathode
3. anode
4. anode

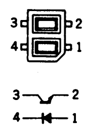
RD2.4M-B
RD4.7M-B2
RD6.2M-B1
RD9.1M-B1
SB05-05CP



PT480FI


1
2
1. Emitter
2. Collector

TLP907-0



SECTION 5

EXPLODED VIEWS

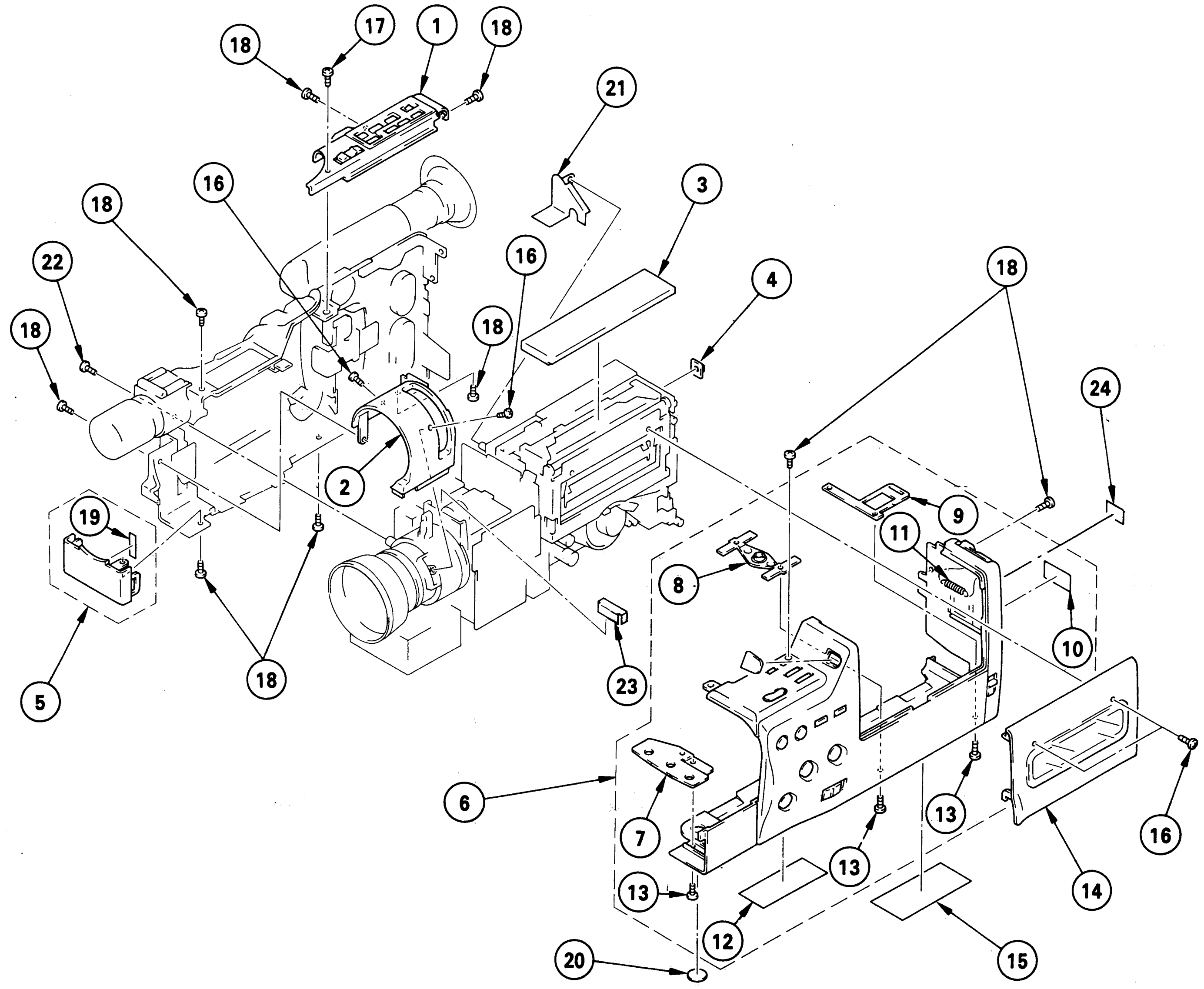
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

5-1. RIGHT CABINET ASSEMBLY


18
17
1
18
21
18
16
3
16
22
18
18
4
18
24
19
2
9
11
8
10
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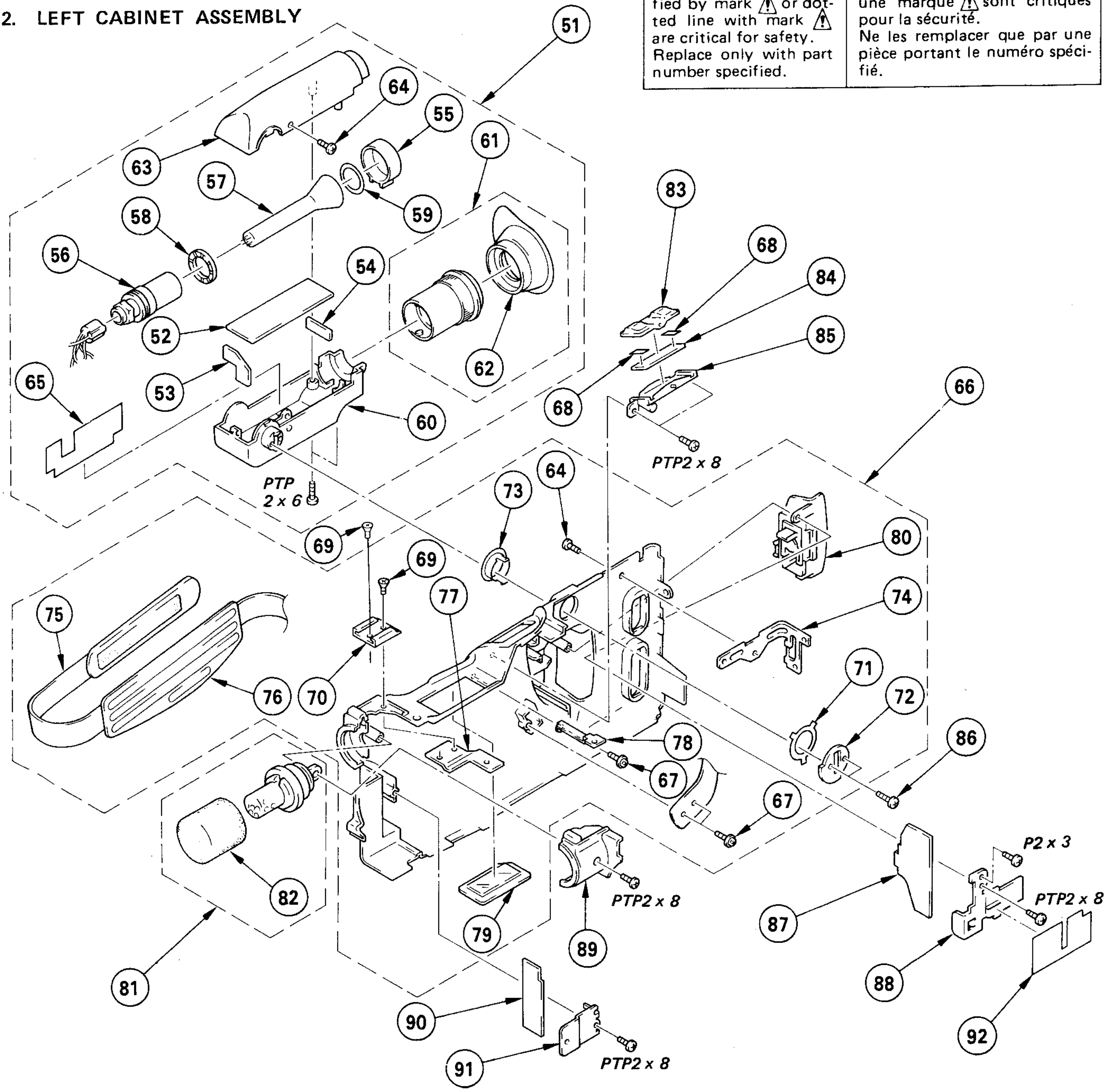
16
15

No.	Part No.	Description	Remark
1	X-3725-105-1	PANEL ASSY, VTR	
2	X-3724-552-1	COVER ASSY, LENS	
3	X-3725-104-1	LID ASSY, LS	
4	3-724-593-01	KEY TOP	
5	X-3724-549-1	PLATE ASSY, LIGHT TRANSMISSION	19
6	X-3725-106-1	CABINET (R) ASSY	7-13
7	*3-726-534-01	JOINT (LOWER)	
8	3-724-507-01	SCREW, TRIPOD	
9	*3-724-509-01	PLATE (LOWER), STRAP	
10	*3-719-683-01	LABEL, BATTERY FITTING	
11	3-571-832-00	SPRING, TENSION	
12	*3-703-034-21	LABEL, CAUTION	
13	3-719-381-01	SCREW (M2X4)	
14	X-3725-103-1	LID ASSY, CASSETTE	
15	*3-726-519-01	LABEL, MODEL NUMBER (U/C)	
	*3-728-678-01	LABEL, MODEL NUMBER (E)	
16	3-713-791-01	SCREW (M1.7X5), TAPPING, P2	
17	3-713-786-41	SCREW (M2X8)	
18	3-719-381-01	SCREW (M2X4)	
19	*2-532-810-00	CUSHION, 15X5X0.3	
20	3-725-181-01	CAP, LOWER, AF	
21	*3-725-119-01	RETAINER, FPC	
22	3-713-790-41	SCREW (M2X10), TAPPING, P3	
23	3-728-610-02	PLATE, LIGHT INTERCEPTION	
24	*3-704-256-01	LABEL, CAUTION (US, E MODEL)	

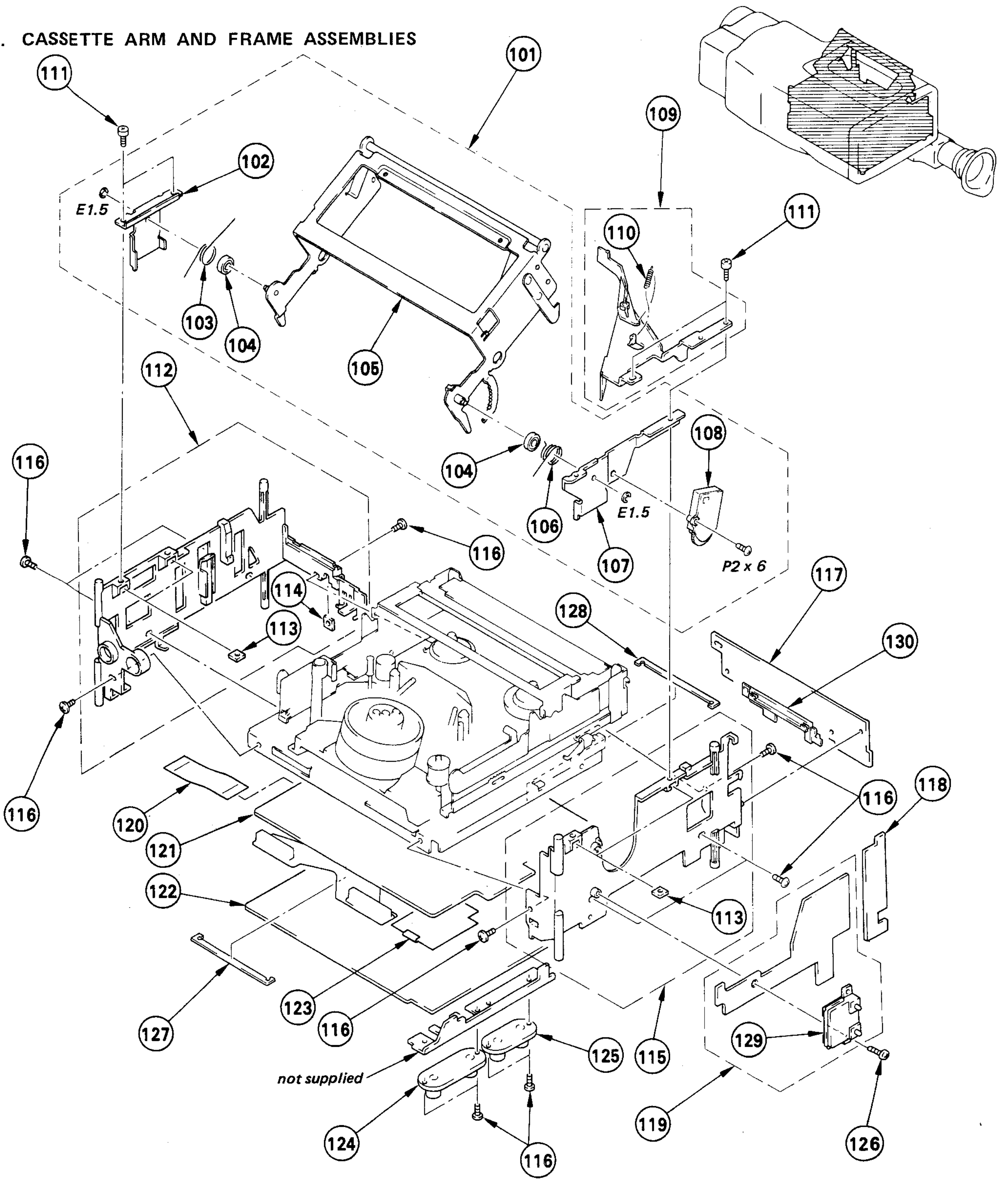
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-2. LEFT CABINET ASSEMBLY



No.	Part No.	Description	Remark
51	A-7019-093-A	EVF BLOCK ASSY	52-65
52	*A-7061-188-A	VF-13 BOARD, COMPLETE	
53	*A-7070-645-A	TL-18 BOARD, COMPLETE	
54	*A-7070-646-A	TL-19 BOARD, COMPLETE	
55	X-3724-509-1	HOLDER ASSY, CRT	
56	⚠.1-451-310-21	DEFLECTION YOKE (B/W) (L951)	
57	⚠.1-546-065-11	CATHODE-RAY TUBE, B/W (M01JVV47WB)(V901)	
58	3-724-549-01	LOCK, CRT	
59	3-724-570-01	RING, CRT FIXED	
60	A-7080-486-A	CABINET (LOWER) ASSY, EVF	
61	A-7090-807-A	HOLDER BLOCK ASSY, FINDER	62
62	3-724-544-02	EYE CUP	
63	X-3724-508-1	CABINET (UPPER) ASSY, EVF	
64	3-719-381-01	SCREW (M2X4)	
65	*3-725-156-01	INSULATOR (B), EVF	
66	A-7080-572-A	CABINET (L) BLOCK ASSY	64, 67, 69-80
67	3-669-480-21	+ PTPWH 2	
68	*2-532-810-00	CUSHION, 15X5X0.3	
69	3-713-787-01	SCREW (M2X4)	
70	3-724-511-01	SHOE, ACCESSORY	
71	3-724-512-01	SPRING	
72	3-724-513-01	PLATE, LOCK	
73	3-724-514-01	SLEEVE, EVF	
74	3-724-525-01	BRACKET (UPPER), STRAP	
75	3-724-582-01	BELT, GRIP	
76	3-724-591-01	PAD, GRIP	
77	*3-726-505-01	SHEET METAL, ACC	
78	*3-726-507-01	JOINT, DL	
79	*3-726-531-01	WINDOW, INDICATION, DDS	
80	X-3724-564-1	BASE ASSY, SP	
81	1-542-101-11	MICROPHONE (C-2020)	82
82	X-2356-712-1	WIND SCREEN ASSY	
83	3-724-526-01	BUTTON, ZOOM	
84	*A-7070-678-A	ZM-8 BOARD, COMPLETE	
85	3-724-527-01	BASE, ZOOM BUTTON	
86	3-713-792-01	SCREW (M2X10)	
87	A-7070-679-A	SW-92 BOARD, COMPLETE	
88	*3-724-569-01	SHEET METAL, SP	
89	3-725-178-01	HOUSING, MICROPHONE	
90	*A-7061-168-A	MC-24 BOARD, COMPLETE	
91	3-726-508-01	SHEET METAL, MC	
92	*3-725-153-01	SHEET, INSULATING, SHEET METAL	

5-3. CASSETTE ARM AND FRAME ASSEMBLIES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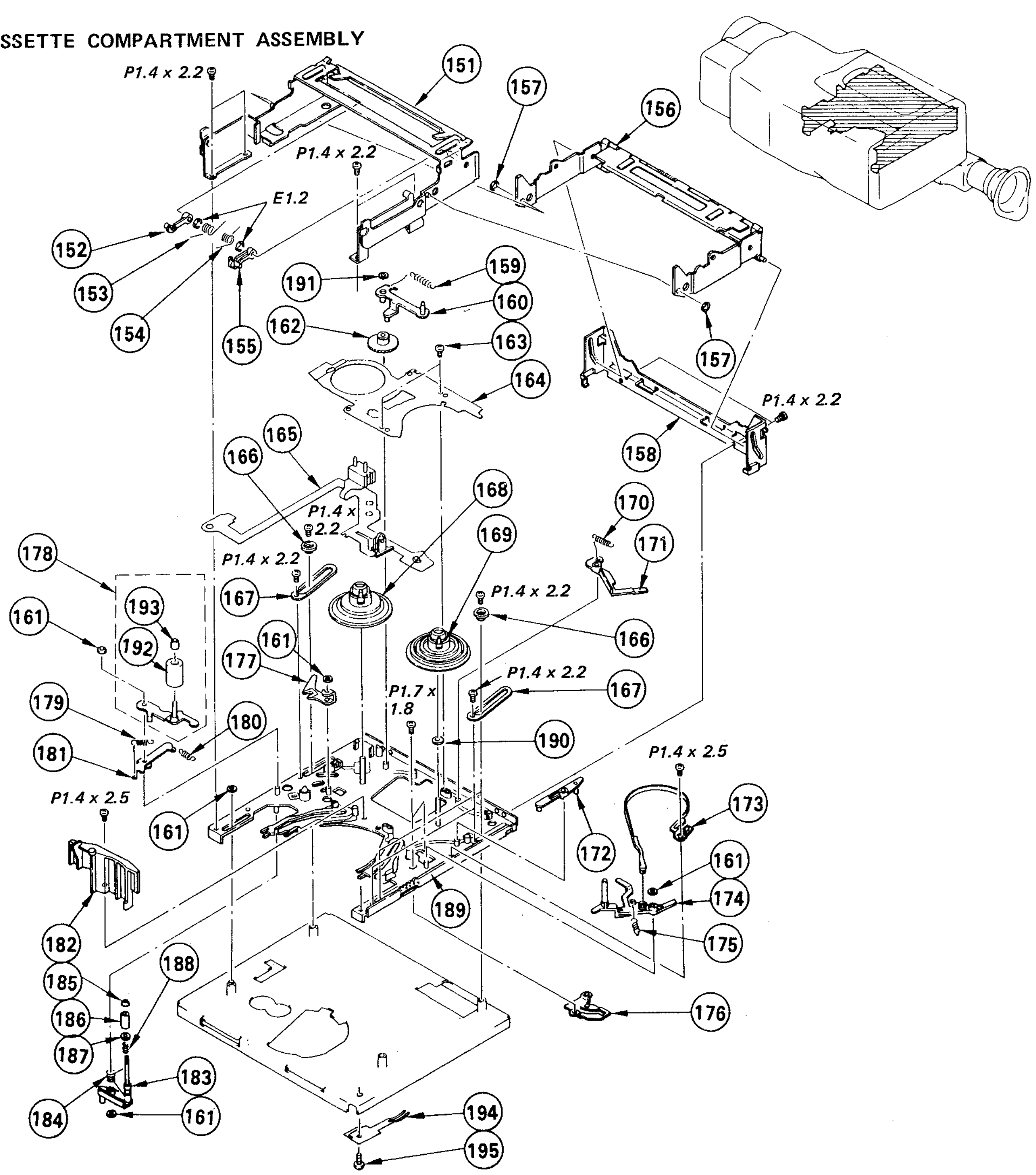
No.	Part No.	Description	Remark
101	A-7040-141-A	ARM BLOCK ASSY (3), CASSETTE	102-108
102	*3-719-606-01	PLATE (T2) (M), SIDE	
103	3-695-582-01	SPRING, TORSION	
104	3-695-512-02	COLLAR, CASSETTE ARM	
105	X-3712-034-4	ARM ASSY (2), CASSETTE	
106	3-695-581-01	SPRING, TORSION	
107	3-695-641-01	PLATE (S2), SIDE	
108	3-681-528-11	DAMPER	
109	A-7040-140-B	GUARD BLOCK ASSY, TAPE	110
110	3-695-718-01	SPRING, TENSION	
111	3-719-697-01	SCREW (M1.7X5), SPECIAL HEAD	
112	*X-3724-503-1	FRAME (F) ASSY, MD	113, 114
113	3-716-418-01	NUT, FRAME PLATE	
114	3-718-233-01	NUT, PLATE	
115	*X-3724-504-1	FRAME (R) ASSY, MD	113
116	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
117	*A-7070-677-A	FV-1 BOARD, COMPLETE	
118	*A-7070-639-A	EJ-4 BOARD, COMPLETE	
119	*A-7070-730-A	PA-13 BOARD, COMPLETE	129
120	1-574-083-11	CABLE, FLAT (1.0MM PITCH) 15P	
121	*A-7061-282-A	SS-86 BOARD, COMPLETE	128
122	*A-7061-165-A	VA-40 BOARD, COMPLETE	
123	*3-726-558-01	PLATE, SHIELD, VA-SS	
124	1-537-142-11	TERMINAL BOARD (AV OUT) (J361)	
125	1-565-298-11	JACK, PIN 2P (AV IN) (J360)	
126	3-719-601-01	SCREW (B2X5), TAPPING	
127	*3-725-135-01	REINFORCEMENT, SS-MD	
128	*3-725-136-01	REINFORCEMENT, VA-SS	
129	1-535-658-11	TERMINAL BOARD	
130	3-724-537-01	HOLDER, FV PC BOARD	

5-4. LS CASSETTE COMPARTMENT ASSEMBLY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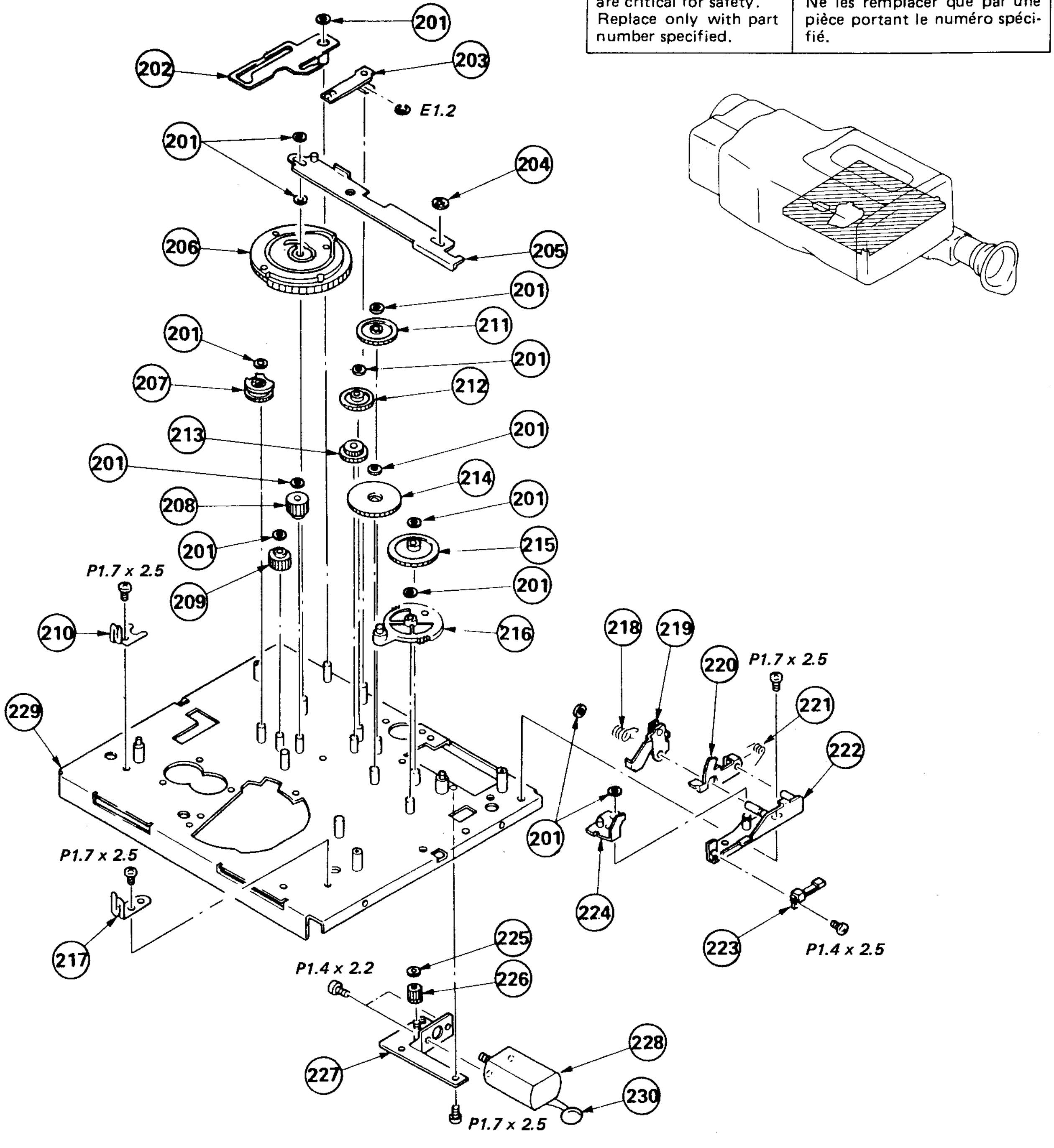
No.	Part No.	Description	Remark
151	X-3695-447-6	COMPARTMENT ASSY, CASSETTE, LS	
152	3-695-595-01	RETAINER (T), CASSETTE	
153	3-695-605-01	SPRING, TORSION	
154	3-695-604-01	SPRING, TORSION	
155	3-695-594-01	RETAINER (S), CASSETTE	
156	X-3695-448-3	ARM ASSY, BLIND	
157	3-669-465-00	WASHER (1.5), STOPPER	
158	3-695-646-01	ARM, LS	
159	3-695-718-01	SPRING, TENSION	
160	X-3712-037-1	LEVER (A) ASSY (2)	
161	3-315-384-31	WASHER, STOPPER	
162	X-3712-025-1	GEAR ASSY, TS	
163	3-699-402-01	SCREW (M1.3X5.5), TAPPING	
164	3-712-165-01	PLATE (2), STOPPER	
165	A-7060-693-A	FP-53 BOARD, COMPLETE	
166	3-695-698-01	GUIDE, LS	
167	3-695-697-01	SPRING, LEAF, LS	
168	X-3695-436-1	TABLE ASSY, REEL, TAKE-UP	
169	X-3712-038-1	TABLE ASSY (2), REEL, SUPPLY	190
170	3-542-475-00	SPRING, TENSION	
171	3-712-151-01	BRAKE (2), SOFT	
172	3-695-735-04	ARM, TG1 RELEASE	
173	X-3695-432-1	BAND ASSY, TG1	
174	X-3712-019-1	ARM ASSY (2), TG1	
175	3-695-591-01	SPRING, TENSION	
176	3-695-733-01	PLATE, CAM, LS	
177	X-3712-022-1	ARM (B) ASSY (2), PINCH	
178	X-3712-032-2	ARM (C) ASSY (2), PINCH	192, 193
179	3-695-622-01	SPRING, TENSION	
180	3-695-719-01	SPRING, TENSION	
181	X-3695-415-1	PINCH LEVER ASSY	
182	3-695-624-01	BASE, PROTECT	
183	X-3712-027-1	ARM ASSY (2), TG7	
184	3-695-541-01	SPRING	
185	3-712-158-01	FLANGE, UPPER, TG7	
186	3-712-160-01	SLEEVE (2), TG7	
187	3-712-159-01	FLANGE, LOWER, TG7	
188	3-712-157-01	SPRING, COMPRESSION	
189	X-3713-962-1	CHASSIS ASSY (2), LS	
190	3-701-444-01	WASHER, 6	
191	3-321-393-01	WASHER, STOPPER	
192	X-3695-416-1	PINCH ROLLER ASSY	
193	3-695-569-01	SLEEVE (P), PINCH INNER	
194	*3-725-151-01	PLATE, GROUND, RP	
195	3-719-695-21	SCREW (M1.7X2.5), SPECIAL HEAD	

5-5. CHASSIS ASSEMBLY (1)

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.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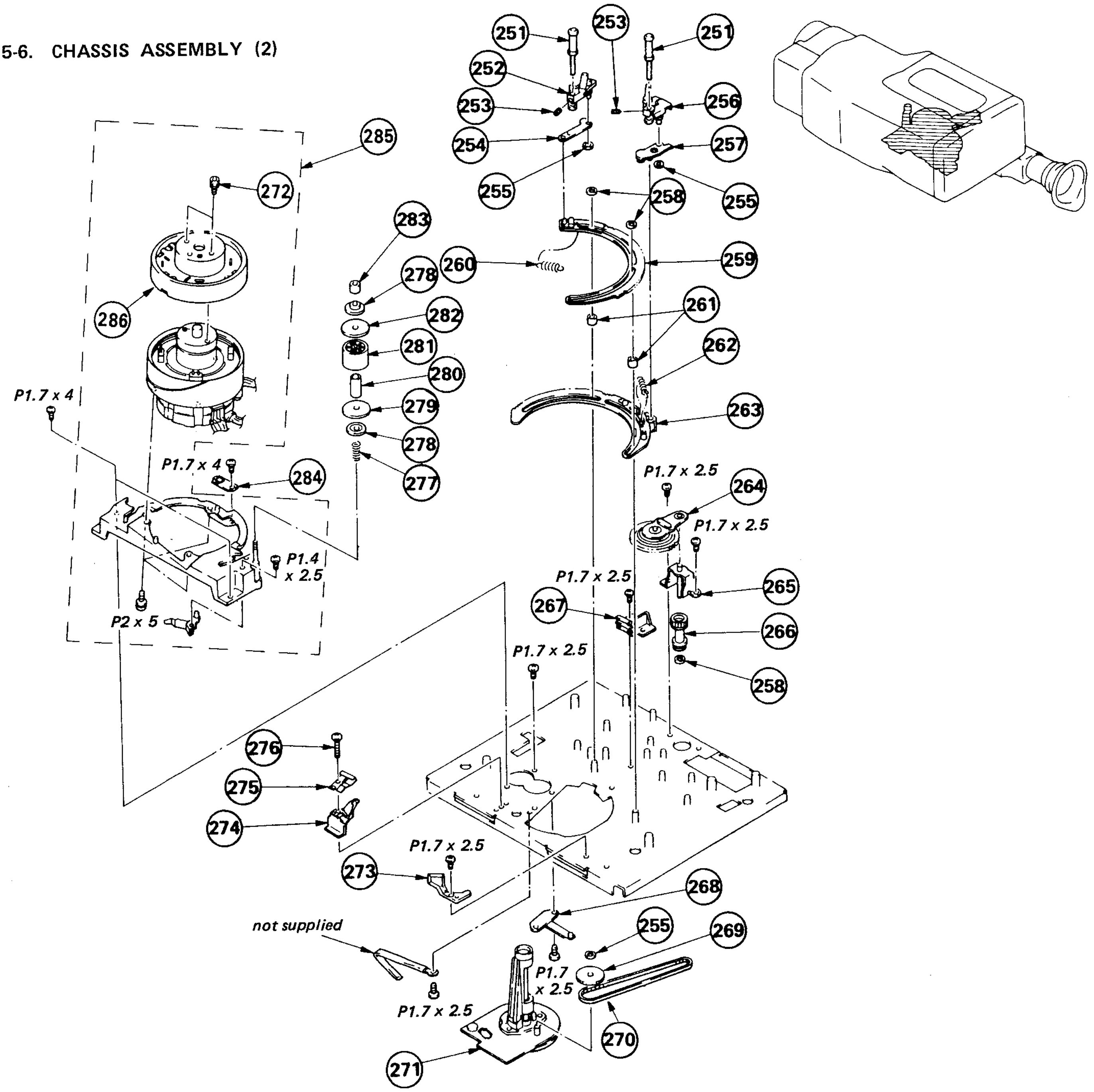
No.	Part No.	Description	Remark
201	3-315-384-31	WASHER, STOPPER	
202	X-3712-023-1	ARM (A) ASSY (2), PINCH	
203	3-695-589-01	LEVER (B), REEL LOCK	
204	3-669-465-00	WASHER (1.5), STOPPER	
205	X-3695-439-4	SLIDER ASSY, M	
206	X-3712-031-1	CAM ASSY (2)	
207	3-712-156-01	GEAR (M) (2), THREADING	
208	3-695-537-01	GEAR (T), THREADING	
209	3-695-536-01	GEAR (S), THREADING	
210	3-695-706-01	SPRING (T)	
211	3-695-559-01	GEAR (B), THREADING	
212	3-695-724-01	GEAR (D), THREADING	
213	3-712-162-02	GEAR (C) (2), THREADING	
214	3-695-714-01	GEAR (A), LS	
215	3-695-563-04	GEAR (B), LS	
216	X-3695-417-1	GEAR (C) ASSY, LS	
217	3-695-705-01	SPRING (S)	
218	3-713-937-01	SPRING (A) (2)	
219	X-3695-418-1	ARM ASSY, LOCK	
220	3-695-574-01	ARM, RETURN PREVENTION	
221	3-695-579-01	SPRING (B), TORSION	
222	X-3712-018-1	BASE ASSY (2), LOCK	
223	1-553-226-00	SWITCH, LEAF (CASSETTE DOWN) (S902)	
224	X-3695-438-1	ARM ASSY, EJECT	
225	3-321-393-01	WASHER, STOPPER	
226	3-712-150-01	WHEEL, WORM	
227	X-3712-017-1	HOLDER ASSY, MOTOR	
228	⚠.1-541-508-11	MOTOR, DC (LA14-323F) (LOADING) (M903)	
229	X-3712-036-1	CHASSIS ASSY (2), MECHANICAL	
230	1-161-032-00	CAP, CERAMIC 0.01MF (C901)	

5-6. CHASSIS ASSEMBLY (2)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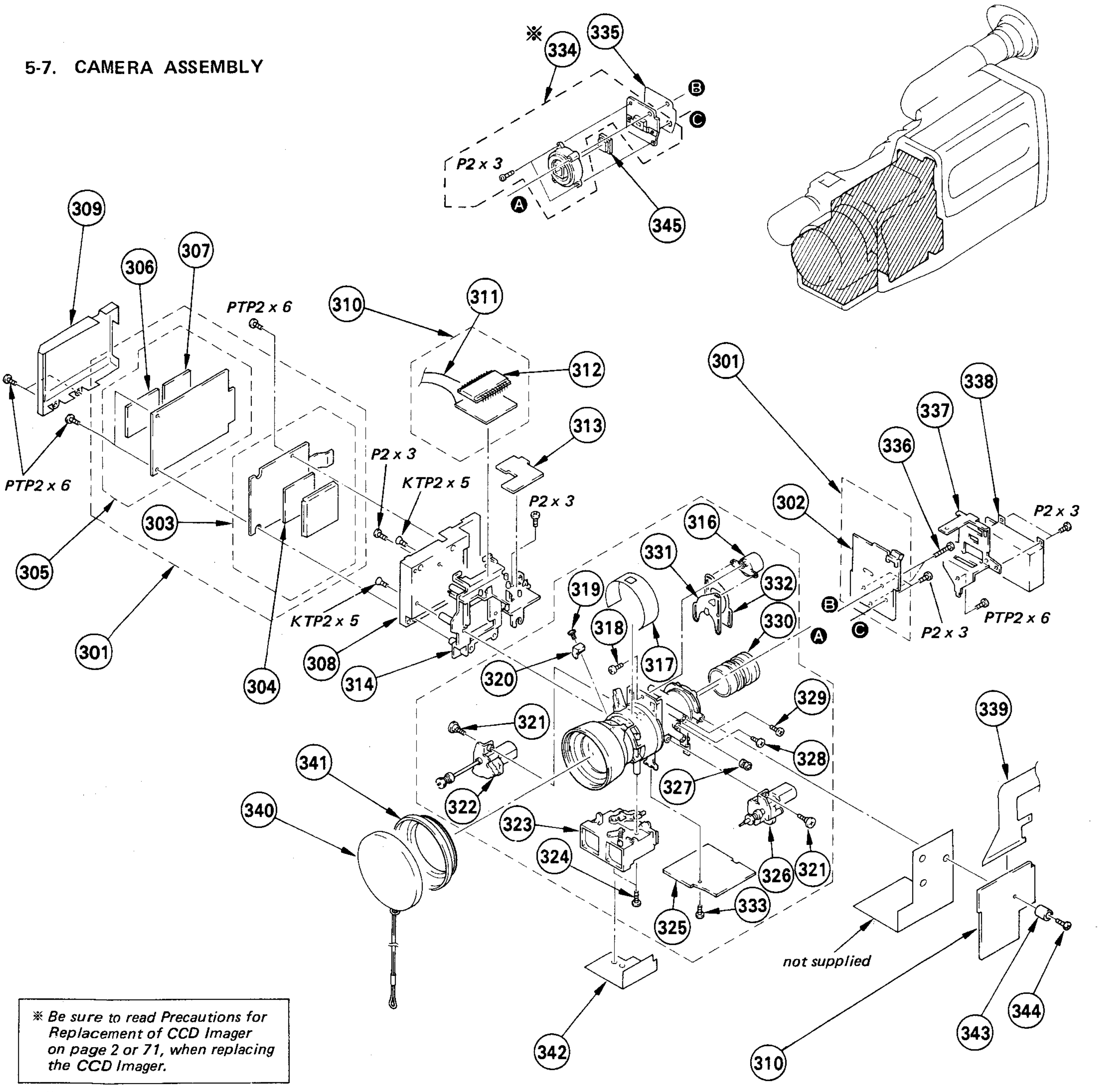
No.	Part No.	Description	Remark
251	X-3712-029-1	ROLLER ASSY (2), GUIDE	
252	X-3712-030-1	BASE ASSY (2), TG5	
253	3-695-770-01	SCREW, GR LOCK	
254	3-695-545-01	JOINT, T	
255	3-321-393-01	WASHER, STOPPER	
256	X-3712-028-1	BASE ASSY (2), TG4	
257	X-3695-429-1	JOINT ASSY, S	
258	3-315-384-31	WASHER, STOPPER	
259	X-3695-414-1	SLIDER (T) ASSY, THREADING	
260	3-695-773-01	SPRING, TENSION	
261	3-695-544-01	ROLLER, GUIDE	
262	3-695-772-01	SPRING, TENSION	
263	X-3695-428-1	SLIDER (S) ASSY, THREADING	
264	X-3712-024-1	ARM ASSY (2), GEAR	
265	X-3712-020-1	BASE ASSY (2), MIDWAY PULLEY	
266	X-3712-021-1	PULLEY ASSY (2), MIDWAY	
267	3-712-163-01	SUPPORT (2), SLIDER	
268	1-535-574-11	TERMINAL, SHAFT GROUND	
269	X-3695-413-1	GEAR ASSY, CHANGE	
270	3-695-637-01	BELT, RELAY	
271	8-835-309-01	MOTOR, DC BHF-3301C (CAPSTAN) (M902)	
272	3-686-440-01	SCREW (2X5), BOLT WASHER	
273	3-695-627-01	STOPPER, SLIDER, S	
274	3-695-628-01	STOPPER, SLIDER, T	
275	3-695-677-01	SPRING (T), LEAF	
276	3-695-519-01	SCREW, FITTING, LEAF SPRING(T)	
277	3-695-532-01	SPRING, COMPRESSION	
278	3-695-727-01	RETAINER, FLANGE, UPPER	
279	3-695-794-01	FLANGE, LOWER, TG2	
280	3-695-530-01	SLEEVE, TG2	
281	3-712-164-01	ROLLER (2), TG2	
282	3-695-528-01	FLANGE, TG2	
283	3-695-529-01	NUT, TG2	
284	1-807-238-11	SENSOR, DEW CONDENSATION	
285	⚠.A-7048-173-A	DRUM ASSY (DGU-20B-R)	272, 286
286	A-7[illegible]49-130-A	DRUM ASSY, UPPER (DGR-20-R)	

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-7. CAMERA ASSEMBLY



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※ *Be sure to read Precautions for Replacement of CCD Imager on page 2 or 71, when replacing the CCD Imager.*

No.	Part No.	Description	Remark
301	*A-7061-190-A	VC BOARD BLOCK, COMPLETE	302-307
302	*A-7061-161-A	VC-38 BOARD, COMPLETE	
303	*A-7061-162-A	VC-39 BOARD, COMPLETE	304
304	A-7068-127-A	DT-71 (HIC) BOARD, COMPLETE	
305	*A-7061-163-A	VC-40 BOARD, COMPLETE	306, 307
306	A-7068-128-A	MX-7 (HIC) BOARD, COMPLETE	
307	A-7068-129-A	PR-20 (HIC) BOARD, COMPLETE	
308	*X-3724-550-1	CASE (A) ASSY, SHIELD, VC	
309	*X-3724-551-1	CASE (B) ASSY, SHIELD, VC	
310	*A-7061-167-A	FC-16 BOARD, COMPLETE	311, 312
311	1-626-232-11	FP-123 FLEXIBLE BOARD (19P)	
312	1-808-385-11	L.C.D	
313	*A-7070-637-A	FD-6 BOARD, COMPLETE	
314	3-725-179-01	FRAME, CAMERA	
315	1-547-284-11	LENSE, ZOOM (VCL-906XB)	316-333
316	3-707-442-01	METER, IG (IRIS) (M904)	
317	3-707-443-01	SHEET, ZOOM	
318	3-707-444-01	SCREW, IG METER CLAMP	
319	3-707-445-01	SCREW, (N) STOPPER CLAMP	
320	3-707-446-01	STOPPER, (N)	
321	3-707-447-01	SCREW, MOTOR CLAMP	
322	3-707-448-01	MOTOR UNIT, AF (M905)	
323	3-707-449-01	BLOCK UNIT, AF	
324	3-707-450-01	SCREW, AF BLOCK CLAMP	
325	3-707-451-01	PC BOARD UNIT, AF	
326	3-707-452-01	MOTOR UNIT, ZOOM (M906)	
327	3-707-453-01	ROLLER, ECCECTRIC	
328	3-707-454-01	SCREW	
329	3-707-455-01	SCREW, RELAY SET	
330	3-707-456-01	MIRROR TUBE UNIT, RELAY	
331	3-707-457-01	(B) ASSY, IRIS FEATHER	
332	3-707-458-01	FEATHER, IRIS (A)	
333	3-707-459-01	SCREW, AF PC BOARD CLAMP	
334	A-7090-878-A	CCD ASSY (CCD IMAGER)	
335	*3-725-180-01	SHEET, INSULATING, CCD HOLDER	
336	3-713-790-51	SCREW (M2X16), TAPPING, P3	
337	3-725-182-01	JOINT	
338	1-464-993-11	CONVERTER, DC-DC	
339	1-626-233-11	FP-124 FLEXIBLE BOARD	
340	A-7090-806-A	CAP ASSY, HOOD	
341	3-724-589-01	HOOD, LENZ	
342	3-726-533-01	COVER, AF	
343	*3-725-184-01	RETAINER, FC	
344	3-719-601-01	SCREW (B2X5), TAPPING	
345	A-7090-879-A	KIT, FILTER, OPTICAL	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- SEMICONDUCTORS
  In each case, U: μ, for example:
  UA. . . : μA. . . , UPA. . . : μPA. . . ,
  UPB. . . : μPB. . . , UPC. . . : μPC. . . ,
  UPD. . . : μPD. . .
- CAPACITORS
  MF: μF, PF: μμF
- COILS
  MMH: mH, UH: μH

Ref.No	Part No.	Description	Remark
	A-7060-693-A	FP-53 BOARD, COMPLETE **********************	
	3-713-904-01	HOLDER (2), LED	

DIODE

Ref.No	Part No.	Description	Remark
D302	8-719-940-81	LED GL452S	
D303	8-719-801-55	TLP907-0	
D304	8-719-801-55	TLP907-0	

SWITCH

Ref.No	Part No.	Description	Remark
S301	1-570-869-11	SWITCH, PUSH (2 KEY)	

****

Ref.No	Part No.	Description	Remark
	*A-7061-167-A	FC-16 BOARD, COMPLETE **********************	

CAPACITOR

Ref.No	Part No.	Description			
C160	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C161	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C162	1-162-638-11	CERAMIC CHIP	1MF		16V
C163	1-162-638-11	CERAMIC CHIP	1MF		16V
C164	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C165	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C166	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C190	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C191	1-124-246-61	ELECT	6.8MF	20%	35V
C192	1-124-246-61	ELECT	6.8MF	20%	35V
C193	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C194	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C195	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C196	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C197	1-163-034-00	CERAMIC CHIP	0.033MF		50V

CONNECTOR

Ref.No	Part No.	Description
CN191	*1-566-181-11	PIN, CONNECTOR (PC BOARD) 2P

TRIMMER

Ref.No	Part No.	Description
CT190	1-141-331-11	CAP, VAR, TRIMMER (CHIP)

DIODE

Ref.No	Part No.	Description
D160	8-719-404-12	DIODE MA159
D161	8-719-105-73	ZENER DIODE RD4.7M-B2
D190	8-719-105-99	ZENER DIODE RD6.2M-B1

IC

Ref.No	Part No.	Description
IC190	8-759-142-12	IC UPD7503G-A49
IC191	8-759-937-56	IC S-8054ALB-LM-S

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q160	8-729-905-23	TRANSISTOR 2SA1576R	
Q161	8-729-905-23	TRANSISTOR 2SA1576R	
Q163	8-729-905-23	TRANSISTOR 2SA1576R	
Q164	8-729-905-23	TRANSISTOR 2SA1576R	
Q165	8-729-109-42	FET 2SK94-X2	
Q166	8-729-905-35	TRANSISTOR 2SC4081R	
Q167	8-729-903-97	TRANSISTOR FMS1FE	
Q168	8-729-905-35	TRANSISTOR 2SC4081R	
Q190	8-729-810-19	TRANSISTOR 2SC4396-TL	
Q191	8-729-905-23	TRANSISTOR 2SA1576R	
Q192	8-729-903-97	TRANSISTOR FMS1FE	

RESISTOR

Ref.No	Part No.	Description			
R120	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R121	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R122	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R123	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R124	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R125	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R126	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R127	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R128	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R129	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R130	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R131	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R132	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R133	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R134	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R135	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R136	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R137	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R138	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R139	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R140	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R141	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R142	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R143	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R144	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R145	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R146	1-218-167-91	METAL GLAZE	330K	1%	1/10W
R147	1-216-530-00	METAL GLAZE	390K	1%	1/10W
R148	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R149	1-216-115-00	METAL GLAZE	560K	5%	1/10W
R160	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R161	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R162	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R163	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R164	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R165	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R166	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R167	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R168	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R169	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R170	1-216-129-00	METAL GLAZE	2.2M	5%	1/10W
R171	1-216-115-00	METAL GLAZE	560K	5%	1/10W

FC-16 **MC-24** **VF-13**

Ref.No	Part No.	Description	Remark
R172	1-216-105-00	METAL GLAZE 220K 5% 1/10W	
R173	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R174	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R175	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R176	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R190	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R191	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R192	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R193	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R194	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R195	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R196	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R197	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R198	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R199	1-216-073-00	METAL GLAZE 10K 5% 1/10W	

SWITCH

Ref.No	Part No.	Description	Remark
S190	1-570-870-21	SWITCH, SLIDE (AUTO LOCK)	
S191	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (T 1)	
S192	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (T 2)	
S193	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (MEMO)	
S194	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (COLOR)	
S195	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (FOCUS)	
S196	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)(BACK LIGHT)	
S197	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (SHUTTER SPEED)	

TERMINAL PIN

Ref.No	Part No.	Description	Remark
TP190	*1-535-622-11	PIN, TERMINAL	
TP191	*1-535-622-11	PIN, TERMINAL	

CRYSTAL

Ref.No	Part No.	Description	Remark
X190	1-527-997-21	VIBRATOR, CRYSTAL	

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*A-7061-168-A MC-24 BOARD, COMPLETE
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CAPACITOR

Ref.No	Part No.	Description	Remark
C585	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C586	1-124-225-00	ELECT 100MF 20% 6.3V	
C587	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C588	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C589	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C590	1-163-137-00	CERAMIC CHIP 680PF 10% 50V	
C591	1-163-077-00	CERAMIC CHIP 0.1MF 50V	
C592	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C593	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C594	1-162-638-11	CERAMIC CHIP 1MF 16V	
C595	1-163-081-00	CERAMIC CHIP 0.22MF 25V	
C596	1-124-225-00	ELECT 100MF 20% 6.3V	
C598	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C599	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C600	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C601	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN585	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	

DIODE

Ref.No	Part No.	Description	Remark
D585	8-719-105-99	ZENER DIODE RD6.2M-B1	

IC

Ref.No	Part No.	Description	Remark
IC585	8-759-820-51	IC LA7293M	

JACK

Ref.No	Part No.	Description	Remark
J585	1-507-921-00	JACK (MIC)	
J586	1-563-454-11	JACK, MINIATURE (MIC DC)	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q585	8-729-905-37	TRANSISTOR 2SC4081T106Q	

RESISTOR

Ref.No	Part No.	Description	Remark
R585	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R586	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R587	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R588	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R589	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R590	1-249-405-11	CARBON 100 5% 1/4W	
R591	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R592	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R593	1-216-295-00	METAL GLAZE 0 5% 1/10W	

SWITCH

Ref.No	Part No.	Description	Remark
S585	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE)	

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*A-7061-188-A VF-13 BOARD, COMPLETE
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Ref.No	Part No.	Description	Remark
	3-713-535-01	CUSHION, CRT	
	*3-725-155-01	INSULATOR, FB	

CAPACITOR

Ref.No	Part No.	Description	Remark
C901	1-126-369-11	ELECT 220MF 20% 6.3V	
C902	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C904	1-127-486-00	ELECT(SOLID) 47MF 20% 6.3V	
C905	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V	
C906	1-163-115-00	CERAMIC CHIP 82PF 5% 50V	
C907	⚠.1-162-625-11	CERAMIC CHIP 0.0047MF 5% 50V	
C908	⚠.1-163-015-00	CERAMIC CHIP 0.0033MF 10% 50V	
C909	1-126-193-11	ELECT 1MF 20% 50V	
C911	1-131-388-00	TANTALUM 68MF 10% 3.15V	
C912	1-102-038-00	CERAMIC 0.001MF 99% 500V	

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C913	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C915	1-126-193-11	ELECT	1MF	20%	50V
C916	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C917	1-135-098-21	TANTAL. CHIP	47MF	20%	6.3V
C919	1-135-070-00	TANTAL. CHIP	0.1MF	10%	35V
C920	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V

CONNECTOR

CN901	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P
CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P

CONPOSITION CIRCUIT BLOCK

CP901	1-238-119-11	RES, ADJ

CRYSTAL

CRT901	1-526-978-21	SOCKET ASSY, CRT

DIODE

D903	8-719-400-20	DIODE MA152WA

IC

IC901	8-759-420-01	IC AN2512S

COIL

L901 ⚠	.1-408-421-00	INDUCTOR	100UH
L902	1-410-379-21	INDUCTOR CHIP	6.8UH
L903 ⚠	.1-459-858-11	COIL, FERRITE (HLC)	

TRANSISTOR

Q902	8-729-402-31	TRANSISTOR 2SD1819A-Q
Q903	8-729-106-64	TRANSISTOR 2SD1615
Q904	8-729-216-32	TRANSISTOR 2SA1163

RESISTOR

R902	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R903	1-216-041-00	METAL GLAZE	470	5%	1/10W
R904 ⚠	.1-216-073-00	METAL GLAZE	10K	5%	1/10W
R906 ⚠	.1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R907	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R908	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R909	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R911	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R912	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R913	1-216-123-11	METAL GLAZE	1.2M	5%	1/10W
R914	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R915	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R916	1-216-125-00	METAL GLAZE	1.5M	5%	1/10W
R917	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R919	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R920	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R921	1-216-013-00	METAL GLAZE	33	5%	1/10W
R922	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R923	1-216-025-00	METAL GLAZE	100	5%	1/10W
R924	1-216-306-11	METAL GLAZE	3.9	5%	1/10W
R925	1-216-336-11	METAL GLAZE	47K	1%	1/10W
R926	1-218-163-11	METAL GLAZE	120K	1%	1/10W
R928	1-216-870-11	METAL GLAZE	180K	1%	1/10W
R929	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R930	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R931	1-216-121-00	METAL GLAZE	1M	5%	1/10W

VARIABLE RESISTOR

RV901	1-230-203-00	RES, ADJ, METAL GLAZE 2.2M

TRANSFORMER

T901 ⚠	.1-439-428-11	TRANSFORMER ASSY, FLYBACK

THERMISTOR

TH901	1-807-938-11	THERMISTOR

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*A-7070-645-A TL-18 BOARD, COMPLETE
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DIODE

D950	8-719-941-34	LED GL1HD51

RESISTOR

R950	1-216-037-00	METAL GLAZE	330	5%	1/10W

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*A-7070-646-A TL-19 BOARD, COMPLETE
****

DIODE

D955	8-719-941-34	LED GL1HD51

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*A-7061-190-A VC BOARD, COMPLETE BLOCK
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*A-7061-161-A VC-38 BOARD, COMPLETE
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3-724-530-01 HOLDER, WB SENSOR

CAPACITOR

C600	1-135-092-21	TANTAL. CHIP	3.3MF	20%	16V
C601	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C602	1-135-092-21	TANTAL. CHIP	3.3MF	20%	16V
C603	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C604	1-135-123-91	TANTAL. CHIP	3.3MF	20%	25V

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note:** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

VC-38

Ref.No	Part No.	Description	Remark
C605	1-126-196-11	ELECT 3.3MF 20%	50V
C606	1-124-248-00	ELECT 22MF 20%	35V
C607	1-163-036-00	CERAMIC CHIP 0.068MF	50V
C608	1-163-036-00	CERAMIC CHIP 0.068MF	50V
C609	1-164-005-11	CERAMIC CHIP 0.47MF	25V
C610	1-126-205-11	ELECT 47MF 20%	6.3V
C611	1-162-638-11	CERAMIC CHIP 1MF	16V
C612	1-163-016-00	CERAMIC CHIP 0.0039MF 5%	50V
C850	1-130-467-00	MYLAR 470PF 5%	50V
C851	1-130-481-00	MYLAR 0.0068MF 5%	50V
C852	1-135-096-21	TANTAL. CHIP 4.7MF 20%	10V
C853	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C854	1-124-779-00	ELECT 10MF 20%	16V
C855	1-162-638-11	CERAMIC CHIP 1MF	16V
C856	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C857	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C858	1-124-779-00	ELECT 10MF 20%	16V

CONNECTOR

Ref.No	Part No.	Description	Remark
CN600	*1-566-547-11	CONNECTOR, FPC (NON ZIF) 15P	
CN601	*1-565-542-21	PIN, CONNECTOR (PC BOARD) 3P	
CN850	*1-566-183-11	PIN, CONNECTOR (PC BOARD) 4P	
CN851	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	

DIODE

Ref.No	Part No.	Description	Remark
D600	8-719-404-32	DIODE MA141WA	
D601	8-719-404-46	DIODE MA110	
D850	8-719-400-20	DIODE MA151WA	

IC

Ref.No	Part No.	Description	Remark
IC600	A-7090-878-A	IC ICX026AK (CCD IMAGER)	
IC850	8-759-030-27	IC MC34182MR	
IC851	8-759-106-23	IC UPD4066BG	
IC852	8-759-012-75	IC MC146805F2FPSC82533F	
IC853	8-759-100-93	IC UPC393G2	

COIL

Ref.No	Part No.	Description	Remark
L600	1-412-032-21	INDUCTOR CHIP 100UH	
L850	1-412-031-11	INDUCTOR CHIP 47UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q600	8-729-105-53	TRANSISTOR 2SK300	
Q601	8-729-402-13	TRANSISTOR XN1501	
Q602	8-729-905-35	TRANSISTOR 2SC4081R	
Q850	8-729-403-06	TRANSISTOR XN1113	
Q851	8-729-403-06	TRANSISTOR XN1113	
Q852	8-729-805-69	TRANSISTOR 2SA1341	
Q855	8-729-403-07	TRANSISTOR XN1213	
Q856	8-729-403-07	TRANSISTOR XN1213	
Q868	8-729-805-45	TRANSISTOR 2SC3395	
Q869	8-729-403-07	TRANSISTOR XN1213	

RESISTOR

Ref.No	Part No.	Description	Remark
R600	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R601	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R602	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R603	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R604	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R605	1-216-107-00	METAL GLAZE 270K 5% 1/10W	
R606	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R607	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R608	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R609	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R610	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R611	1-216-042-00	METAL GLAZE 510 5% 1/10W	
R613	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R614	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R850	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R851	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R852	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R853	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R855	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R856	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R857	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R858	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R860	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R861	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R862	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R863	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R864	1-216-107-00	METAL GLAZE 270K 5% 1/10W	
R865	1-216-099-00	METAL GLAZE 120K 5% 1/10W	
R866	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R867	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R868	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R869	1-216-115-00	METAL GLAZE 560K 5% 1/10W	
R870	1-216-107-00	METAL GLAZE 270K 5% 1/10W	
R871	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R872	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R873	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R882	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R883	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R884	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R885	1-216-085-00	METAL GLAZE 33K 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV600	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV850	1-230-870-11	RES, ADJ, METAL GLAZE 10K	

BALANCE SENSOR

Ref.No	Part No.	Description	Remark
SB850	1-807-684-11	SENSOR, WHITE BALANCE	

CRYSTAL

Ref.No	Part No.	Description	Remark
X850	1-567-152-00	OSCILLATOR, CERAMIC (4MHz)	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
	*A-7061-162-A	VC-39 BOARD, COMPLETE ***********************		
	A-7061-127-A	DT-71 BOARD, COMPLETE **********************		
		CAPACITOR		
C620	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V
C621	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V
C622	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V
C623	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V
C624	1-162-637-11	CERAMIC CHIP 0.47MF		16V
C625	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C626	1-126-205-11	ELECT 47MF	20%	6.3V
C629	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V
C630	1-126-204-11	ELECT 47MF	20%	16V
C631	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C632	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C633	1-126-204-11	ELECT 47MF	20%	16V
C634	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C635	1-124-778-00	ELECT 22MF	20%	6.3V
C636	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C637	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C638	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C639	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C641	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C642	1-135-089-21	TANTAL. CHIP 6.8MF	20%	20V
C643	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C644	1-126-204-11	ELECT 47MF	20%	16V
C645	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C646	1-124-778-00	ELECT 22MF	20%	6.3V
C647	1-163-036-00	CERAMIC CHIP 0.068MF		50V
C648	1-126-202-21	ELECT 22MF	20%	35V
C649	1-163-036-00	CERAMIC CHIP 0.068MF		50V
C652	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C653	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C654	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C655	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C656	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C658	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C659	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C660	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C661	1-126-199-21	ELECT 6.8MF	20%	35V
C662	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C663	1-126-199-21	ELECT 6.8MF	20%	35V
C664	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C669	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C670	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C673	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C675	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C676	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C677	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C678	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C679	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C680	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C681	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C682	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C683	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C684	1-163-133-00	CERAMIC CHIP 470PF	10%	50V
C687	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C688	1-163-023-00	CERAMIC CHIP 0.015MF	5%	50V
		CONNECTOR		
CN620	1-566-428-11	PIN, CONNECTOR 4P		
CN622	*1-506-743-11	PIN, CONNECTOR 5P		
CN623	*1-566-181-11	PIN, CONNECTOR (PC BOARD) 2P		
		DIODE		
D623	8-719-404-49	DIODE MA111		
D624	8-719-404-49	DIODE MA111		
D626	8-719-404-49	DIODE MA111		
		IC		
IC620	8-759-701-24	IC NJM3414M		
IC621	8-752-326-08	IC CXD1159Q		
		COIL		
L621	1-412-034-21	INDUCTOR CHIP 330UH		
L622	1-412-029-11	INDUCTOR CHIP 10UH		
L623	1-412-029-11	INDUCTOR CHIP 10UH		
L624	1-412-034-21	INDUCTOR CHIP 330UH		
L625	1-412-032-21	INDUCTOR CHIP 100UH		
L626	1-410-204-31	INDUCTOR CHIP 10UH		
L627	1-410-204-31	INDUCTOR CHIP 10UH		
L628	1-410-192-51	INDUCTOR CHIP 1UH		
L629	1-410-180-51	INDUCTOR CHIP 0.1UH		
L630	1-410-180-51	INDUCTOR CHIP 0.1UH		
L631	1-410-180-51	INDUCTOR CHIP 0.1UH		
L632	1-410-192-51	INDUCTOR CHIP 1UH		
		TRANSISTOR		
Q621	8-729-402-84	TRANSISTOR XN4601		
Q622	8-729-402-84	TRANSISTOR XN4601		
Q623	8-729-402-84	TRANSISTOR XN4601		
Q624	8-729-403-07	TRANSISTOR XN1213		
Q625	8-729-809-96	TRANSISTOR 2SA1416-S-TD		
Q626	8-729-810-08	TRANSISTOR 2SC3646-S-TD		
Q627	8-729-402-84	TRANSISTOR XN4601		
Q629	8-729-905-23	TRANSISTOR 2SA1576R		
Q630	8-729-402-84	TRANSISTOR XN4601		
		RESISTOR		
R621	1-216-295-00	METAL GLAZE 0	5%	1/10W
R622	1-216-121-00	METAL GLAZE 1M	5%	1/10W
R624	1-216-077-00	METAL GLAZE 15K	5%	1/10W
R625	1-216-013-00	METAL GLAZE 33	5%	1/10W

When indicating parts by reference number, please include the board name.

VC-39 VC-40

Ref.No	Part No.	Description				Remark
R626	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R627	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R629	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R630	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R633	1-216-044-00	METAL GLAZE	620	5%	1/10W	
R634	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R635	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R636	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R637	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R638	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R640	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R641	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R642	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R643	1-216-084-00	METAL GLAZE	30K	5%	1/10W	
R644	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R645	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R647	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R648	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R649	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R650	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R651	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R652	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R653	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R654	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R655	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R656	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R657	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R658	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R660	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R661	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R662	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R663	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R666	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R667	1-216-005-00	METAL GLAZE	15	5%	1/10W	
R668	1-216-005-00	METAL GLAZE	15	5%	1/10W	
R669	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R670	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R671	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R672	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R674	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R675	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R678	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R679	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R680	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R681	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R682	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R694	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R695	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R696	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R697	1-216-089-00	METAL GLAZE	47K	5%	1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV620	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV621	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	
RV622	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	
RV623	1-230-873-11	RES, ADJ, METAL GLAZE 47K	

FLAT CABLE

Ref.No	Part No.	Description	Remark
W620	1-574-095-11	CABLE, FLAT (1.0MM PITCH) 15P	
W621	1-559-927-11	CABLE, FLAT (1.0MM PITCH) 33P	

CRYSTAL

Ref.No	Part No.	Description	Remark
X620	1-567-898-11	OSCILLATOR, CRYSTAL (28.6363MHz)	

****

*A-7061-163-A VC-40 BOARD, COMPLETE
****

A-7068-128-A MX-7 BOARD, COMPLETE
****

A-7068-129-A PR-20 BOARD, COMPLETE
****

CAPACITOR

Ref.No	Part No.	Description				Remark
C701	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
C702	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
C703	1-124-778-00	ELECT	22MF	20%	6.3V	
C704	1-124-778-00	ELECT	22MF	20%	6.3V	
C705	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
C706	1-126-206-11	ELECT	100MF	20%	6.3V	
C707	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C710	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C711	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C713	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C714	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C715	1-135-091-00	TANTAL. CHIP	1MF	20%	16V	
C716	1-135-091-00	TANTAL. CHIP	1MF	20%	16V	
C717	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C718	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C719	1-135-091-00	TANTAL. CHIP	1MF	20%	16V	
C720	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C721	1-163-093-00	CERAMIC CHIP	10PF	5%	50V	
C722	1-164-005-11	CERAMIC CHIP	0.47MF		25V	
C723	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C724	1-164-005-11	CERAMIC CHIP	0.47MF		25V	
C725	1-163-093-00	CERAMIC CHIP	10PF	5%	50V	
C727	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	
C728	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C729	1-126-198-11	ELECT	4.7MF	20%	35V	
C730	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
C731	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
C732	1-124-566-11	ELECT	120MF	20%	6.3V	
C733	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C734	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C736	1-163-038-00	CERAMIC CHIP	0.1MF		25V	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
C737	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C738	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C739	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C740	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C741	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C742	1-124-778-00	ELECT 22MF	20%	6.3V
C743	1-124-778-00	ELECT 22MF	20%	6.3V
C744	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C745	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C746	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C747	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C748	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C749	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C750	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C752	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C753	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C754	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V
C755	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V
C756	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V
C757	1-163-103-00	CERAMIC CHIP 27PF	5%	50V

CONNECTOR

CN701	*1-566-183-11	PIN, CONNECTOR (PC BOARD) 4P
CN702	*1-566-183-21	PIN, CONNECTOR (PC BOARD) 4P
CN703	*1-566-547-11	CONNECTOR, FPC (NON ZIF) 15P
CN704	*1-565-532-11	PIN, CONNECTOR (PC BOARD) 7P
CN705	*1-566-187-11	PIN, CONNECTOR (PC BOARD) 8P

DIODE

D701	8-719-404-46	DIODE MA110

FILTER

FL701	1-236-189-11	FILTER, LOW PASS
FL702	1-236-187-11	FILTER, LOW PASS
FL703	1-236-190-11	FILTER, LOW PASS
FL704	1-236-192-11	FILTER, LOW PASS
FL705	1-236-196-11	LPF
FL706	1-415-554-21	DELAY LINE, LC
FL707	1-236-191-11	FILTER, BAND PASS

IC

IC701	8-752-033-34	IC CXA1072R

COIL

L701	1-412-031-11	INDUCTOR CHIP 47UH
L702	1-412-031-11	INDUCTOR CHIP 47UH
L703	1-410-204-31	INDUCTOR CHIP 10UH
L704	1-410-657-21	INDUCTOR CHIP 180UH

TRANSISTOR

Ref.No	Part No.	Description			Remark
Q701	8-729-905-23	TRANSISTOR 2SA1576R			
Q702	8-729-905-35	TRANSISTOR 2SC4081R			
Q705	8-729-905-23	TRANSISTOR 2SA1576R			
Q706	8-729-905-35	TRANSISTOR 2SC4081R			
Q707	8-729-905-23	TRANSISTOR 2SA1576R			
Q708	8-729-905-35	TRANSISTOR 2SC4081R			
Q709	8-729-402-84	TRANSISTOR XN6401			
Q710	8-729-905-23	TRANSISTOR 2SA1576R			
Q711	8-729-905-35	TRANSISTOR 2SC4081R			

RESISTOR

R701	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R702	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R703	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R704	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R705	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R706	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R707	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R708	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R709	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R710	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R711	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R712	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R713	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R714	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R715	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R716	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R717	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R718	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R725	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R726	1-216-295-00	METAL GLAZE	0	5%	1/10W
R727	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R728	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R729	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R730	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R732	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R733	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R734	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R736	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R737	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R738	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R739	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R740	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R741	1-216-080-00	METAL GLAZE	20K	5%	1/10W
R742	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R743	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R745	1-216-295-00	METAL GLAZE	0	5%	1/10W
R746	1-216-295-00	METAL GLAZE	0	5%	1/10W
R747	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R748	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R749	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R750	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W
R751	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R752	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R753	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R754	1-216-082-00	METAL GLAZE	24K	5%	1/10W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R755	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R756	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R757	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R758	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R759	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R760	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R761	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R762	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R764	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R765	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R766	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R767	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R768	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R769	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R770	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R771	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R772	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R773	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R774	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R776	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R777	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R778	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R779	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R780	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R781	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R782	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R783	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R784	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R786	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R787	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R788	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R789	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R790	1-216-072-00	METAL GLAZE 9.1K 5% 1/10W	
R791	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R792	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R793	1-216-080-00	METAL GLAZE 20K 5% 1/10W	
R794	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R795	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R796	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R797	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R798	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R799	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R801	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R802	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R805	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R806	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R809	1-216-298-00	METAL GLAZE 2.2 5% 1/10W	
R810	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R811	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R812	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R813	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R814	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R815	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R816	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R819	1-216-079-00	METAL GLAZE 18K 5% 1/10W	

VARIABLE RESISTOR

RV701	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV702	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV703	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV704	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV705	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV706	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV707	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV708	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV709	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV710	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV711	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV712	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV713	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV714	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV715	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV716	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV717	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV718	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV719	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV720	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV722	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV724	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K	

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*A-7061-165-A VA-40 BOARD, COMPLETE

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CAPACITOR

C251	1-124-779-00	ELECT 10MF 20% 16V	
C252	1-124-779-00	ELECT 10MF 20% 16V	
C253	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C254	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
C255	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
C256	1-124-779-00	ELECT 10MF 20% 16V	
C257	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C258	1-124-779-00	ELECT 10MF 20% 16V	
C259	1-162-638-11	CERAMIC CHIP 1MF 16V	
C260	1-163-141-00	CERAMIC CHIP 0.001MF 5% 50V	
C261	1-163-141-00	CERAMIC CHIP 0.001MF 5% 50V	
C262	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C263	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C264	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C266	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C267	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C268	1-163-125-00	CERAMIC CHIP 220PF 5% 50V	
C269	1-163-017-00	CERAMIC CHIP 0.0047MF 10% 50V	
C270	1-163-019-00	CERAMIC CHIP 0.0068MF 10% 50V	
C271	1-163-129-00	CERAMIC CHIP 330PF 5% 50V	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
C272	1-162-638-11	CERAMIC CHIP 1MF		16V
C273	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V
C274	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C275	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C276	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V
C277	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C278	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C360	1-124-779-00	ELECT 10MF	20%	16V
C361	1-126-196-11	ELECT 3.3MF	20%	50V
C362	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C363	1-135-091-00	TANTAL. CHIP 1MF	10%	16V
C364	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C365	1-126-196-11	ELECT 3.3MF	20%	50V
C366	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C367	1-126-198-11	ELECT 4.7MF	20%	35V
C368	1-126-195-11	ELECT 2.2MF	20%	50V
C369	1-124-779-00	ELECT 10MF	20%	16V
C370	1-126-193-11	ELECT 1MF	20%	50V
C371	1-124-779-00	ELECT 10MF	20%	16V
C372	1-135-091-00	TANTAL. CHIP 1MF	10%	16V
C373	1-135-091-00	TANTAL. CHIP 1MF	10%	16V
C374	1-124-778-00	ELECT 22MF	20%	6.3V
C375	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C376	1-126-193-11	ELECT 1MF	20%	50V
C377	1-126-193-11	ELECT 1MF	20%	50V
C378	1-126-193-11	ELECT 1MF	20%	50V
C379	1-126-193-11	ELECT 1MF	20%	50V
C380	1-126-193-11	ELECT 1MF	20%	50V
C381	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C382	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C383	1-124-779-00	ELECT 10MF	20%	16V
C384	1-124-779-00	ELECT 10MF	20%	16V
C385	1-126-198-11	ELECT 4.7MF	20%	35V
C386	1-126-198-11	ELECT 4.7MF	20%	35V
C387	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C388	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C389	1-124-778-00	ELECT 22MF	20%	6.3V
C390	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C391	1-126-191-11	ELECT 0.47MF	20%	50V
C392	1-124-779-00	ELECT 10MF	20%	16V
C393	1-126-246-11	ELECT 220MF	20%	4V
C394	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C395	1-124-779-00	ELECT 10MF	20%	16V
C396	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C397	1-126-192-11	ELECT 0.68MF	20%	50V
C398	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C399	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C400	1-124-779-00	ELECT 10MF	20%	16V
C401	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C402	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C403	1-124-779-00	ELECT 10MF	20%	16V
C404	1-126-191-11	ELECT 0.47MF	20%	50V
C405	1-124-779-00	ELECT 10MF	20%	16V

Ref.No	Part No.	Description		Remark
C406	1-163-113-00	CERAMIC CHIP 68PF	5%	50V
C407	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C408	1-126-205-11	ELECT 47MF	20%	6.3V
C409	1-126-191-11	ELECT 0.47MF	20%	50V
C410	1-126-205-11	ELECT 47MF	20%	6.3V
C411	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C412	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C413	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C414	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C415	1-126-208-11	ELECT 47MF	20%	4V
C416	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C417	1-124-779-00	ELECT 10MF	20%	16V
C418	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C419	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C420	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C421	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C422	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C423	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C424	1-163-107-00	CERAMIC CHIP 39PF	5%	50V
C425	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C426	1-163-127-00	CERAMIC CHIP 270PF	5%	50V
C428	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C429	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C430	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C431	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C432	1-163-113-00	CERAMIC CHIP 68PF	5%	50V
C433	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
C434	1-124-778-00	ELECT 22MF	20%	6.3V
C435	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C436	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C437	1-163-107-00	CERAMIC CHIP 39PF	5%	50V
C438	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C439	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C440	1-163-114-00	CERAMIC CHIP 75PF	5%	50V
C441	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C442	1-163-015-00	CERAMIC CHIP 0.0033MF	10%	50V
C443	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C444	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C445	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C446	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
C447	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C448	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
C449	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C450	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C451	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C452	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C453	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C454	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C455	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C456	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C457	1-163-091-00	CERAMIC CHIP 8PF	0.25PF	50V
C458	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C459	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description			Remark
C460	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C461	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C462	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C463	1-124-778-00	ELECT	22MF	20%	6.3V
C464	1-124-778-00	ELECT	22MF	20%	6.3V
C466	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C467	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C468	1-124-779-00	ELECT	10MF	20%	16V
C469	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C470	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C471	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C472	1-124-779-00	ELECT	10MF	20%	16V
C473	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C474	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C475	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C476	1-124-779-00	ELECT	10MF	20%	16V
C477	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C478	1-124-779-00	ELECT	10MF	20%	16V
C479	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C480	1-124-779-00	ELECT	10MF	20%	16V
C481	1-124-779-00	ELECT	10MF	20%	16V
C482	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C483	1-124-779-00	ELECT	10MF	20%	16V
C484	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C485	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C486	1-124-778-00	ELECT	22MF	20%	6.3V
C488	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C489	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C490	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C491	1-126-191-11	ELECT	0.47MF	20%	50V
C492	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C493	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C494	1-124-279-11	ELECT	3.3MF	20%	25V
C495	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C496	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C497	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C501	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C502	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C503	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C505	1-124-779-00	ELECT	10MF	20%	16V
C507	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C508	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C511	1-135-072-21	TANTAL. CHIP	0.22MF	20%	35V
C512	1-163-034-00	CERAMIC CHIP	0.033MF		50V
C513	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C514	1-163-059-00	CERAMIC CHIP	0.01MF	10%	50V
C550	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C551	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C552	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C554	1-126-209-11	ELECT	100MF	20%	4V
C555	1-135-091-00	TANTAL. CHIP	1MF	10%	16V
C556	1-135-091-00	TANTAL. CHIP	1MF	10%	16V
C557	1-135-105-00	TANTAL. CHIP	33MF	20%	4V

Ref.No	Part No.	Description			Remark
C558	1-126-207-11	ELECT	33MF	20%	4V
C559	1-135-091-00	TANTAL. CHIP	1MF	10%	16V
C560	1-126-209-11	ELECT	100MF	20%	4V
C561	1-126-198-11	ELECT	4.7MF	20%	35V
C562	1-163-036-00	CERAMIC CHIP	0.068MF		50V
C563	1-126-206-11	ELECT	100MF	20%	6.3V
C564	1-126-206-11	ELECT	100MF	20%	6.3V
C565	1-135-157-21	TANTAL. CHIP	10MF	20%	6.3V
C566	1-124-779-00	ELECT	10MF	20%	16V
C567	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C568	1-124-779-00	ELECT	10MF	20%	16V
C569	1-126-206-11	ELECT	100MF	20%	6.3V
C570	1-163-145-00	CERAMIC CHIP	0.0015MF	5%	50V
C571	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C572	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C573	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C575	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C576	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C577	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V

CONNECTOR

CN360	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P
CN361	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P

TRIMMER

CV360	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30PF

DIODE

D360	8-719-106-43	ZENER DIODE RD9.1M-B1
D361	8-719-106-43	ZENER DIODE RD9.1M-B1
D362	8-719-106-43	ZENER DIODE RD9.1M-B1
D363	8-719-106-43	ZENER DIODE RD9.1M-B1
D364	8-719-106-43	ZENER DIODE RD9.1M-B1
D365	8-719-106-43	ZENER DIODE RD9.1M-B1
D366	8-719-106-43	ZENER DIODE RD9.1M-B1
D367	8-719-106-43	ZENER DIODE RD9.1M-B1
D369	8-719-104-23	DIODE 1SS123
D370	8-719-100-05	DIODE 1S2837
D371	8-719-100-05	DIODE 1S2837
D373	8-719-106-43	ZENER DIODE RD9.1M-B1

FILTER

FL360	1-236-146-11	FILTER, BAND PASS
FL361	1-409-439-11	FILTER, TRAP
FL362	1-567-306-11	FILTER, CERAMIC
FL550	1-236-145-11	FILTER, BAND PASS

IC

IC250	8-759-209-53	IC CXA1204Q
IC360	8-752-031-46	IC CXA1200Q
IC361	8-752-323-46	IC CXL1501M
IC362	8-752-033-40	IC CXA1201Q
IC364	8-759-710-09	IC NJM2233AM

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
IC365	8-759-710-09	IC NJM2233AM	
IC366	8-759-100-93	IC UPC393G2	
IC367	8-759-112-72	IC UPD6142G-101	
IC368	8-759-200-81	IC TC4053BF	
IC369	8-759-200-81	IC TC4053BF	
IC550	8-741-150-50	IC SBX1505-01	

COIL

Ref.No	Part No.	Description	Remark
L250	1-408-789-21	INDUCTOR CHIP 100UH	
L251	1-408-795-21	INDUCTOR CHIP 330UH	
L252	1-410-393-11	INDUCTOR CHIP 100UH	
L360	1-412-031-11	INDUCTOR CHIP 47UH	
L361	1-412-031-11	INDUCTOR CHIP 47UH	
L362	1-410-393-11	INDUCTOR CHIP 100UH	
L363	1-412-031-11	INDUCTOR CHIP 47UH	
L364	1-410-392-11	INDUCTOR CHIP 82UH	
L365	1-410-393-11	INDUCTOR CHIP 100UH	
L366	1-410-393-11	INDUCTOR CHIP 100UH	
L367	1-410-389-11	INDUCTOR CHIP 47UH	
L368	1-410-381-11	INDUCTOR CHIP 10UH	
L369	1-410-657-21	INDUCTOR CHIP 180UH	
L371	1-408-795-21	INDUCTOR CHIP 330UH	
L372	1-408-795-21	INDUCTOR CHIP 330UH	
L373	1-408-797-11	INDUCTOR CHIP 470UH	
L374	1-410-377-11	INDUCTOR CHIP 4.7UH	
L375	1-410-393-11	INDUCTOR CHIP 100UH	
L376	1-408-795-21	INDUCTOR CHIP 330UH	
L377	1-410-655-11	INDUCTOR CHIP 120UH	
L378	1-410-393-11	INDUCTOR CHIP 100UH	
L379	1-410-656-11	INDUCTOR CHIP 150UH	
L380	1-410-388-21	INDUCTOR CHIP 39UH	
L381	1-410-377-11	INDUCTOR CHIP 4.7UH	
L382	1-410-388-21	INDUCTOR CHIP 39UH	
L383	1-410-380-21	INDUCTOR CHIP 8.2UH	
L384	1-410-388-21	INDUCTOR CHIP 39UH	
L385	1-410-392-11	INDUCTOR CHIP 82UH	
L386	1-410-393-11	INDUCTOR CHIP 100UH	
L387	1-410-388-21	INDUCTOR CHIP 39UH	
L388	1-410-390-11	INDUCTOR CHIP 56UH	
L389	1-410-392-11	INDUCTOR CHIP 82UH	
L390	1-410-392-11	INDUCTOR CHIP 82UH	
L550	1-410-389-11	INDUCTOR CHIP 47UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q250	8-729-905-23	TRANSISTOR 2SA1576R	
Q251	8-729-905-35	TRANSISTOR 2SC4081R	
Q252	8-729-905-23	TRANSISTOR 2SA1576R	
Q253	8-729-109-42	TRANSISTOR 2SK94X2	
Q254	8-729-905-18	TRANSISTOR DTC144EU	
Q360	8-729-101-07	TRANSISTOR 2SB798	
Q361	8-729-905-35	TRANSISTOR 2SC4081R	
Q362	8-729-905-12	TRANSISTOR DTA144EU	
Q363	8-729-905-35	TRANSISTOR 2SC4081R	
Q364	8-729-905-35	TRANSISTOR 2SC4081R	
Q365	8-729-905-35	TRANSISTOR 2SC4081R	
Q366	8-729-905-35	TRANSISTOR 2SC4081R	
Q367	8-729-905-35	TRANSISTOR 2SC4081R	
Q368	8-729-905-23	TRANSISTOR 2SA1576R	
Q369	8-729-905-35	TRANSISTOR 2SC4081R	
Q370	8-729-101-07	TRANSISTOR 2SB798	
Q371	8-729-905-35	TRANSISTOR 2SC4081R	
Q372	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q373	8-729-905-23	TRANSISTOR 2SA1576R	
Q374	8-729-905-23	TRANSISTOR 2SA1576R	
Q375	8-729-905-35	TRANSISTOR 2SC4081R	
Q376	8-729-905-23	TRANSISTOR 2SA1576R	
Q377	8-729-905-18	TRANSISTOR DTC144EU	
Q378	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q379	8-729-905-35	TRANSISTOR 2SC4081R	
Q380	8-729-905-12	TRANSISTOR DTA144EU	
Q381	8-729-905-12	TRANSISTOR DTA144EU	
Q382	8-729-905-35	TRANSISTOR 2SC4081R	
Q383	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q384	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q385	8-729-122-63	TRANSISTOR 2SA1226	
Q386	8-729-903-10	TRANSISTOR FMW1	
Q387	8-729-905-23	TRANSISTOR 2SA1576R	
Q388	8-729-905-23	TRANSISTOR 2SA1576R	
Q389	8-729-905-35	TRANSISTOR 2SC4081R	
Q390	8-729-905-35	TRANSISTOR 2SC4081R	
Q391	8-729-905-18	TRANSISTOR DTC144EU	
Q392	8-729-905-18	TRANSISTOR DTC144EU	
Q393	8-729-905-35	TRANSISTOR 2SC4081R	
Q394	8-729-905-35	TRANSISTOR 2SC4081R	
Q395	8-729-905-35	TRANSISTOR 2SC4081R	
Q396	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q397	8-729-905-23	TRANSISTOR 2SA1576R	
Q398	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q399	8-729-905-23	TRANSISTOR 2SA1576R	
Q400	8-729-905-18	TRANSISTOR DTC144EU	
Q401	8-729-905-23	TRANSISTOR 2SA1576R	
Q402	8-729-905-35	TRANSISTOR 2SC4081R	
Q403	8-729-905-18	TRANSISTOR DTC144EU	
Q404	8-729-905-18	TRANSISTOR DTC144EU	
Q405	8-729-905-35	TRANSISTOR 2SC4081R	
Q406	8-729-103-02	TRANSISTOR 2SA1226	
Q407	8-729-905-35	TRANSISTOR 2SC4081R	
Q408	8-729-905-12	TRANSISTOR DTA144EU	
Q409	8-729-905-18	TRANSISTOR DTC144EU	
Q410	8-729-905-35	TRANSISTOR 2SC4081R	
Q411	8-729-905-35	TRANSISTOR 2SC4081R	
Q412	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q413	8-729-905-23	TRANSISTOR 2SA1576R	
Q414	8-729-905-18	TRANSISTOR DTC144EU	
Q415	8-729-905-18	TRANSISTOR DTC144EU	
Q416	8-729-905-12	TRANSISTOR DTA144EU	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
Q550	8-729-905-35	TRANSISTOR	2SC4081R			
Q551	8-729-905-12	TRANSISTOR	DTA144EU			
Q552	8-729-905-35	TRANSISTOR	2SC4081R			
Q553	8-729-905-35	TRANSISTOR	2SC4081R			
Q554	8-729-905-23	TRANSISTOR	2SA1576R			
Q555	8-729-905-35	TRANSISTOR	2SC4081R			
		RESISTOR				
R251	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R252	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R253	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R254	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R255	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R256	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R257	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R258	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R259	1-216-117-00	METAL GLAZE	680K	5%	1/10W	
R260	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R261	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R262	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R263	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R264	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R265	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R266	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R267	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R268	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R269	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R270	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R271	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R272	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R273	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R274	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R275	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R276	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R279	1-247-883-00	CARBON	150K	5%	1/4W	
R290	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R291	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R292	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R360	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R361	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R362	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R363	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R364	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R365	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R366	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R367	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R368	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R369	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R370	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R371	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R372	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R373	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R374	1-216-089-00	METAL GLAZE	47K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R375	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R376	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R377	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R378	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R379	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R380	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R381	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R382	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R383	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R385	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R387	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R388	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R389	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R390	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R391	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R392	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R394	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R395	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R396	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R397	1-216-304-11	METAL GLAZE	3.3	5%	1/10W	
R398	1-216-015-00	METAL GLAZE	39	5%	1/10W	
R399	1-216-015-00	METAL GLAZE	39	5%	1/10W	
R400	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R401	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R402	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R403	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R404	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R405	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R406	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R407	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R408	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R409	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R410	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R411	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R412	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R413	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R414	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R415	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R416	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R417	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R418	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R419	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R420	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R421	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R422	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R423	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R424	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R425	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R426	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R427	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R428	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R431	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R432	1-216-043-00	METAL GLAZE	560	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R433	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R434	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R435	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R436	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R437	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R439	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R440	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R441	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R442	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R444	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R445	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R446	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R447	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R448	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R449	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R450	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R451	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R452	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R453	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R454	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R456	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R457	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R458	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R459	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R460	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R461	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R462	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R463	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R464	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R465	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R466	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R467	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R468	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R469	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R470	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R471	1-216-009-00	METAL GLAZE 22 5% 1/10W	
R472	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R473	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R474	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R475	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R476	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R477	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R478	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R479	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R480	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R481	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R482	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R483	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R484	1-216-029-00	METAL GLAZE 150 5% 1/10W	
R486	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R487	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R488	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R489	1-216-047-00	METAL GLAZE 820 5% 1/10W	

Ref.No	Part No.	Description	Remark
R491	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R492	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R493	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R494	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R495	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R496	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R497	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R498	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
R499	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R500	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R501	1-216-015-00	METAL GLAZE 39 5% 1/10W	
R502	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R503	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R504	1-216-663-11	METAL CHIP 3.3K 0.50% 1/10W	
R505	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R506	1-216-117-00	METAL GLAZE 680K 5% 1/10W	
R507	1-216-131-11	METAL GLAZE 2.7M 5% 1/10W	
R508	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R509	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R510	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R511	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R512	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R513	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R514	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R515	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R516	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R517	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R518	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R519	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R520	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R521	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R522	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R523	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R525	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R526	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R527	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R528	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R529	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R530	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R531	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R533	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R534	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R535	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R536	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R540	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R541	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R542	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R544	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R545	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R546	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R547	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R548	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R549	1-216-077-00	METAL GLAZE 15K 5% 1/10W	

When indicating parts by reference number, please include the board name.

VA-40 SS-86

Ref.No	Part No.	Description				Remark
R550	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R551	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R553	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R554	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R555	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R556	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R557	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R558	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R559	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R560	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R561	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R562	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R563	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R564	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R565	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R566	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R567	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R568	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R569	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R570	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R571	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R572	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R573	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R574	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R575	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R576	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R577	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R578	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R579	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R580	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R581	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R582	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R583	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R584	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R599	1-216-295-00	METAL GLAZE	0	5%	1/10W	

VARIABLE RESISTOR

RV360	1-230-873-11	RES, ADJ, METAL GLAZE	47K
RV361	1-230-868-11	RES, ADJ, METAL GRAZE	2.2K
RV362	1-230-866-11	RES, ADJ, METAL GRAZE	470
RV363	1-230-868-11	RES, ADJ, METAL GRAZE	2.2K
RV364	1-230-869-11	RES, ADJ, METAL GRAZE	4.7K
RV365	1-230-873-11	RES, ADJ, METAL GRAZE	47K
RV366	1-230-870-11	RES, ADJ, METAL GRAZE	10K
RV367	1-230-866-11	RES, ADJ, METAL GRAZE	470
RV368	1-230-866-11	RES, ADJ, METAL GRAZE	470
RV369	1-230-868-11	RES, ADJ, METAL GRAZE	2.2K

TERMINAL PIN

TP361	*1-535-622-11	PIN, TERMINAL
TP362	*1-535-622-11	PIN, TERMINAL

Ref.No	Part No.	Description	Remark

CRYSTAL

X250	1-567-700-21	VIBRATOR, CRYSTAL (5.9MHz)
X360	1-577-080-11	VIBRATOR, CRYSTAL (3.58MHz)

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*A-7061-282-A SS-86 BOARD, COMPLETE

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*3-725-136-01 REINFORCEMENT, VA-SS

CAPACITOR

C001	1-126-204-11	ELECT	47MF	20%	16V
C002	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C003	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C004	1-126-198-11	ELECT	4.7MF	20%	35V
C006	1-124-779-00	ELECT	10MF	20%	16V
C007	1-124-779-00	ELECT	10MF	20%	16V
C008	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C009	1-126-206-11	ELECT	100MF	20%	6.3V
C010	1-162-638-11	CERAMIC CHIP	1MF		16V
C011	1-162-638-11	CERAMIC CHIP	1MF		16V
C012	1-124-778-00	ELECT	22MF	20%	6.3V
C014	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C015	1-163-034-00	CERAMIC CHIP	0.033MF		50V
C017	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C051	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C052	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C053	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C054	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C055	1-124-577-11	ELECT	82MF	20%	10V
C056	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C057	1-124-577-11	ELECT	82MF	20%	10V
C058	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C059	1-124-577-11	ELECT	82MF	20%	10V
C060	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C061	1-126-204-11	ELECT	47MF	20%	16V
C062	1-162-638-11	CERAMIC CHIP	1MF		16V
C063	1-135-099-00	TANTAL. CHIP	2.2MF	20%	6.3V
C064	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C065	1-127-506-00	ELECT(SOLID)	1MF	20%	25V
C066	1-162-638-11	CERAMIC CHIP	1MF		16V
C067	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C068	1-126-196-11	ELECT	3.3MF	20%	50V
C069	1-124-779-00	ELECT	10MF	20%	16V
C070	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C071	1-124-779-00	ELECT	10MF	20%	16V
C072	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C073	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C074	1-124-779-00	ELECT	10MF	20%	16V
C075	1-124-779-00	ELECT	10MF	20%	16V
C076	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C080	1-163-117-00	CERAMIC CHIP	100PF	5%	50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
C081	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C082	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C083	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C084	1-163-033-00	CERAMIC CHIP 0.022MF		50V
C085	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C086	1-136-017-00	CERAMIC CHIP 0.0047MF		50V
C087	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C088	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C089	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C200	1-124-779-00	ELECT 10MF	20%	16V
C201	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C202	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C204	1-124-779-00	ELECT 10MF	20%	16V
C205	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C206	1-124-779-00	ELECT 10MF	20%	16V
C207	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C209	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C210	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C211	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C212	1-124-779-00	ELECT 10MF	20%	16V
C213	1-124-778-00	ELECT 22MF	20%	6.3V
C215	1-135-145-11	TANTAL. CHIP 0.47MF	20%	25V
C216	1-163-059-00	CERAMIC CHIP 0.01MF	10%	50V
C217	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C218	1-163-089-00	CERAMIC CHIP 6PF	0.5PF	50V
C301	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C302	1-163-121-00	CERAMIC CHIP 150PF	5%	50V
C303	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C304	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C305	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C306	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C308	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C309	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C310	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C311	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C312	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C313	1-163-077-00	CERAMIC CHIP 0.1MF	10%	25V
C314	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C315	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C316	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C317	1-124-778-00	ELECT 22MF	20%	6.3V
C318	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C319	1-163-137-00	CERAMIC CHIP 680PF	5%	50V
C320	1-124-778-00	ELECT 22MF	20%	6.3V
C321	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C322	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C323	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C324	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C325	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C326	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C327	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C328	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C329	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C330	1-124-778-00	ELECT 22MF	20%	6.3V
C332	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C333	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C334	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C335	1-124-778-00	ELECT 22MF	20%	6.3V
C336	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C337	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C338	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C339	1-124-778-00	ELECT 22MF	20%	6.3V
C340	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C341	1-124-779-00	ELECT 10MF	20%	16V
C342	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C343	1-124-778-00	ELECT 22MF	20%	6.3V
C344	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C345	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C346	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C347	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C348	1-124-778-00	ELECT 22MF	20%	6.3V
C349	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C350	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C351	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C353	1-124-778-00	ELECT 22MF	20%	6.3V

CONNECTOR

CN001	*1-564-014-00	PIN, CONNECTOR 4P
CN002	*1-564-014-00	PIN, CONNECTOR 4P
CN003	1-566-529-11	CONNECTOR, FPC (ZIF) 13P
CN004	*1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P
CN005	1-566-725-11	PIN, CONNECTOR 7P
CN006	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P
CN007	1-566-536-11	CONNECTOR, FPC (ZIF) 20P

TRIMMER

CT200	1-141-368-11	CAP, CHIP TRIMMER 30PF
CV360	1-141-368-11	CAP, CHIP TRIMMER

DIODE

D003	8-719-404-12	DIODE MA159
D004	8-719-404-12	DIODE MA159
D050	8-719-938-75	DIODE SB05-05CP
D051	8-719-938-75	DIODE SB05-05CP
D200	8-719-100-03	DIODE 1S2835
D201	8-719-404-12	DIODE MA159
D203	8-713-300-88	DIODE 1T33C-01
D399	8-719-100-13	DIODE RD2.7EB1

IC

IC001	8-759-142-16	IC UPD78112GF-510
IC002	8-759-100-94	IC UPC358G2
IC003	8-759-804-72	IC LB1631M
IC004	8-759-202-45	IC CX20114
IC005	8-759-940-79	IC S-81350AG

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
IC006	8-759-107-68	IC CX20115A	
IC007	8-759-805-06	IC CXA1127MTP-1	
IC200	8-759-141-56	IC UPD7507HG-532-22	
IC201	8-752-323-14	IC CXK58256MF-12LL	
IC202	8-759-972-39	IC MB670493	
IC203	8-759-101-12	IC UPC311G2	
IC301	8-752-033-84	IC CXA1202R	

COIL

Ref.No	Part No.	Description	Remark
L001	1-410-381-11	INDUCTOR CHIP 10UH	
L002	1-410-381-11	INDUCTOR CHIP 10UH	
L050	1-421-983-11	COIL, CHOKE 700UH	
L051	1-421-983-11	COIL, CHOKE 700UH	
L052	1-410-627-11	COIL, CHOKE 100UH	
L052	1-410-627-11	COIL, CHOKE 100UH	
L053	1-410-389-11	INDUCTOR CHIP 47UH	
L200	1-410-377-11	INDUCTOR CHIP 4.7UH	
L201	1-410-377-11	INDUCTOR CHIP 4.7UH	
L202	1-410-377-11	INDUCTOR CHIP 4.7UH	
L203	1-410-377-11	INDUCTOR CHIP 4.7UH	
L204	1-410-384-11	INDUCTOR CHIP 18UH	
L301	1-408-777-00	INDUCTOR CHIP 10UH	
L302	1-408-793-21	INDUCTOR CHIP 220UH	
L303	1-412-029-11	INDUCTOR CHIP 10UH	
L304	1-410-385-11	INDUCTOR CHIP 22UH	
L305	1-410-732-21	INDUCTOR CHIP 0.18UH	
L306	1-410-383-11	INDUCTOR CHIP 15UH	
L307	1-412-033-11	INDUCTOR CHIP 220UH	
L308	1-412-033-11	INDUCTOR CHIP 220UH	

PHOTO TRANSISTOR

Ref.No	Part No.	Description	Remark
PH001	8-729-905-07	PHOTO TRANSISTOR PT480FI	
PH002	8-729-905-07	PHOTO TRANSISTOR PT480FI	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q001	8-729-808-18	TRANSISTOR 2SB926	
Q002	8-729-905-35	TRANSISTOR 2SC4081R	
Q005	8-729-903-10	TRANSISTOR FMW1	
Q006	8-729-903-10	TRANSISTOR FMW1	
Q007	8-729-905-45	TRANSISTOR DTA143EU	
Q008	8-729-905-23	TRANSISTOR 2SA1576R	
Q051	8-729-805-25	TRANSISTOR 2SB1121-T	
Q052	8-729-805-25	TRANSISTOR 2SB1121-T	
Q053	8-729-904-07	TRANSISTOR FMG2	
Q054	8-729-905-23	TRANSISTOR 2SA1576R	
Q055	8-729-810-19	TRANSISTOR 2SC4396	
Q070	8-729-903-97	TRANSISTOR FMS1FE	
Q071	8-729-904-07	TRANSISTOR FMG2	
Q073	8-729-905-45	TRANSISTOR DTA143EU	
Q074	8-729-810-19	TRANSISTOR 2SC4396	
Q076	8-729-810-19	TRANSISTOR 2SC4396	
Q078	8-729-810-10	TRANSISTOR 2SA1676	
Q079	8-729-810-13	TRANSISTOR 2SA1677	
Q080	8-729-805-25	TRANSISTOR 2SB1121-T	
Q081	8-729-805-25	TRANSISTOR 2SB1121-T	
Q201	8-729-905-23	TRANSISTOR 2SA1576R	
Q202	8-729-905-35	TRANSISTOR 2SC4081R	
Q203	8-729-810-19	TRANSISTOR 2SC4396	
Q204	8-729-810-19	TRANSISTOR 2SC4396	
Q205	8-729-810-19	TRANSISTOR 2SC4396	
Q206	8-729-810-19	TRANSISTOR 2SC4396	
Q301	8-729-905-23	TRANSISTOR 2SA1576T106R	
Q302	8-729-117-54	TRANSISTOR 2SA1175	
Q303	8-729-100-76	TRANSISTOR 2SA812	
Q304	8-729-810-10	TRANSISTOR 2SA1676	
Q307	8-729-810-19	TRANSISTOR 2SC4396	
Q308	8-729-810-25	TRANSISTOR 2SC4397	
Q309	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q310	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q311	8-729-905-35	TRANSISTOR 2SC4081R	
Q312	8-729-905-35	TRANSISTOR 2SC4081R	
Q313	8-729-905-35	TRANSISTOR 2SC4081R	
Q314	8-729-810-19	TRANSISTOR 2SC4396	
Q315	8-729-810-13	TRANSISTOR 2SA1677	
Q316	8-729-810-10	TRANSISTOR 2SA1676	
Q317	8-729-905-35	TRANSISTOR 2SC4081R	
Q318	8-729-905-35	TRANSISTOR 2SC4081R	
Q319	8-729-810-10	TRANSISTOR 2SA1676	
Q321	8-729-810-19	TRANSISTOR 2SC4396	

RESISTOR

Ref.No	Part No.	Description	Remark
R001	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R002	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R003	1-216-186-00	METAL GLAZE 330 5% 1/8W	
R004	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R005	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R006	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R007	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R009	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R010	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R011	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R012	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R013	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R014	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R015	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R016	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R017	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R018	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R019	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R020	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R021	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R022	1-216-023-00	METAL GLAZE 82 5% 1/8W	
R024	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R026	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R027	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R028	1-216-073-00	METAL GLAZE 10K 5% 1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R029	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R030	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R031	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R032	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R033	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R034	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R038	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R040	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R041	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R045	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R050	1-249-413-11	CARBON	470	5%	1/4W	
R051	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R052	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R053	1-216-298-00	METAL GLAZE	2.2	5%	1/10W	
R054	1-216-298-00	METAL GLAZE	2.2	5%	1/10W	
R055	1-216-298-00	METAL GLAZE	2.2	5%	1/10W	
R056	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R057	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R058	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R059	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R060	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R061	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R062	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R063	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R064	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R065	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R066	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R067	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R068	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R069	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R070	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R071	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R072	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R073	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R074	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R075	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R076	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R077	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R078	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R079	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R080	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R081	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R082	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R083	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R084	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R085	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R086	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R087	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R090	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R091	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R092	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R093	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R094	1-216-073-00	METAL GLAZE	10K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R095	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R096	1-216-107-00	METAL GLAZE	270K	5%	1/10W	
R097	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R099	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R100	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R101	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R102	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R103	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R104	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R108	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R109	1-216-136-00	METAL GLAZE	2.7	5%	1/8W	
R110	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R111	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R112	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R200	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R201	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R202	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R203	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R204	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R205	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R206	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R207	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R208	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R209	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R210	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R211	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R212	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R213	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R214	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R215	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R216	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R217	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R229	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R230	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R231	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R233	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R235	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R236	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R237	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R238	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R240	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R241	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R242	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R243	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R244	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R245	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R246	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R247	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R248	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R249	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R301	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R302	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R303	1-216-013-00	METAL GLAZE	33	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R304	1-216-019-00	METAL GLAZE	56	5%	1/10W	
R305	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R306	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R307	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R308	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R309	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R310	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R311	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R312	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R313	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R314	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R315	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R316	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R318	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R320	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R322	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R323	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R324	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R325	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R326	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R327	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R328	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R329	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R331	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R332	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R334	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R335	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R336	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R337	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R338	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R339	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R340	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R341	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R342	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R343	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R344	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R345	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R346	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R347	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R348	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R349	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R350	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R351	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R352	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R353	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R354	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R355	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R356	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R357	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R358	1-216-041-00	METAL GLAZE	470	5%	1/10W	

VARIABLE RESISTOR

RV001	1-230-873-11	RES, ADJ, METAL GLAZE 47K	

Ref.No	Part No.	Description	Remark
RV002	1-230-874-11	RES, ADJ, METAL GLAZE 100K	
RV003	1-230-874-11	RES, ADJ, METAL GLAZE 100K	
RV200	1-230-867-11	RES, ADJ, METAL GLAZE 1K	
RV301	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV302	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV306	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K	

HOLDER

TE001	*3-718-223-01	HOLDER, TE	
TE002	*3-718-223-01	HOLDER, TE	

CRYSTAL

X001	1-567-885-11	VIBRATOR, CRYSTAL (12MHz)	
X200	1-567-152-00	OSCILLATOR, CERAMIC (4MHz)	

`**************************************************************`

*A-7070-637-A FD-6 BOARD, COMPLETE

`*********************`

CONNECTOR

CN150	*1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	

SWITCH

S150	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (ZERO MEMO)	
S151	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (EDIT REV)	
S152	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (DATE)	
S153	1-570-910-21	SWITCH, TACTIL(REFLOW TYPE)(COUNT RESET)	
S154	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (EDIT CUE)	
S155	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (TIME)	

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*A-7070-639-A EJ-4 BOARD, COMPLETE

`*********************`

SWITCH

S169	1-571-102-11	SWITCH, SLIDE (EJECT)	

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*A-7070-677-A FV-1 BOARD, COMPLETE

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CONNECTOR

CN160	1-566-527-11	CONNECTOR, FPC (ZIF) 11P	

SWITCH

S160	1-571-101-11	SWITCH, SLIDE (POWER)	
S161	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (SLOW)	
S162	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (FRAME)	
S163	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (PAUSE)	
S164	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (PB)	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
S165	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (FF)	
S166	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (STOP)	
S167	1-571-102-21	SWITCH, SLIDE (REC)	
S168	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (REW)	

* * *

*A-7070-678-A ZM-8 BOARD, COMPLETE

SWITCH

Ref.No	Part No.	Description	Remark
S970	1-571-315-11	SWITCH, KEY BOARD (TELE)	
S971	1-571-315-11	SWITCH, KEY BOARD (WIDE)	

* * *

A-7070-679-A SW-92 BOARD, COMPLETE

CONNECTOR

Ref.No	Part No.	Description	Remark
CN930	*1-566-189-11	PIN, CONNECTOR (PC BOARD) 10P	
CN931	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	
CN932	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	

JACK

Ref.No	Part No.	Description	Remark
J930	1-565-276-11	JACK, ULTRA SMALL 1P (REMOTE)	
J931	1-507-921-00	JACK	

COIL

Ref.No	Part No.	Description	Remark
L930	1-410-369-11	INDUCTOR CHIP 1UH	
L932	1-410-369-11	INDUCTOR CHIP 1UH	

SWITCH

Ref.No	Part No.	Description	Remark
S930	1-553-977-00	SWITCH, SLIDE (STANDBY)	
S931	1-570-689-11	SWITCH, KEY BOARD (REC START/STOP)	

* * *

*A-7070-730-A PA-13 BOARD, COMPLETE

DIODE

Ref.No	Part No.	Description	Remark
D990	⚠.8-719-938-72	DIODE SB01-05CP	

FUSE

Ref.No	Part No.	Description	Remark
F990	⚠.1-532-778-21	FUSE, MICRO (SECONDARY) 1.6A 125V	
F991	⚠.1-532-778-21	FUSE, MICRO (SECONDARY) 1.6A 125V	

BATTERY HOLDER

Ref.No	Part No.	Description	Remark
J991	1-550-104-32	HOLDER, BATTERY	

COIL

Ref.No	Part No.	Description	Remark
L990	1-412-026-11	INDUCTOR CHIP 1UH	
L991	1-412-026-11	INDUCTOR CHIP 1UH	
L992	1-412-026-11	INDUCTOR CHIP 1UH	

SWITCH

Ref.No	Part No.	Description	Remark
S990	1-570-870-21	SWITCH, SLIDE (EDIT)	

CONNECTOR

Ref.No	Part No.	Description	Remark
W991	1-559-927-41	CABLE, FLAT (1.0MM PITCH) 5P	
W992	1-535-658-11	TERMINAL BOARD	

* * *

MISCELLANEOUS

Ref.No	Part No.	Description	Remark
	A-7030-081-A	CCD ASSY (CCD IMAGER)	
	⚠.A-7048-173-A	DRUM ASSY (DGU-20B-R)	
	1-464-993-11	CONVERTER, DC-DC	
	1-535-574-11	TERMINAL, SHAFT GROUND	
	1-542-101-11	MICROPHONE (C-2020)	
	1-547-284-11	LENSE, ZOOM (VCL-906XB)	
	1-562-879-11	CONNECTOR, CARD EDGE 19P	
	1-562-880-11	CONNECTOR, CARD EDGE 15P	
	1-574-083-11	CABLE, FLAT (1.0MM PITCH) 15P	
	1-626-231-11	FP-118 FLEXIBLE BOARD	
	1-626-232-11	FP-123 FLEXIBLE BOARD	
	1-807-238-11	SENSOR, DEW CONDENSATION	
	1-808-385-11	L.C.D	
J360	1-565-298-11	JACK, PIN 2P (AV IN)	
J361	1-537-142-11	TERMINAL BOARD (AV OUT)	
L951	⚠.1-451-310-21	DEFLECTION YOKE (B/W)	
M902	8-835-309-01	MOTOR, DC BHF-3301C (CAPSTAN)	
M903	⚠.1-541-508-11	MOTOR, DC (LA14-323F) (LOADING)	
M904	3-707-442-01	METER, IG (IRIS MOTOR)	
M905	3-707-448-01	MOTOR UNIT, AF	
M906	3-707-452-01	MOTOR UNIT, ZOOM	
S902	1-553-226-00	SWITCH, LEAF (CASSETTE DOWN)	
V901	⚠.1-546-065-11	CATHODE-RAY TUBE, B/W (MOIJVV47WB)	

* * *

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
1-574-039-11	CORD, CONNECTION	
*3-340-514-01	BAG, PROTECTION	
*3-725-185-01	CUSHION (UPPER)	
*3-725-186-01	CUSHION (LOWER)	
3-786-051-21	MANUAL, INSTRUCTION(F40)	
3-786-051-81	MANUAL, INSTRUCTION (F340)	

ACCESSORIES AND PACKING MATERIALS (KIT)

1-571-163-11	SWITCH, ANTENNA CHANGE (CABLE)	
3-712-595-21	BELT, SHOULDER	
*3-725-169-01	SLEEVE, ACC KIT	
*3-725-170-01	ACC CUSHION (UPPER)	
*3-725-171-01	ACC CUSHION (LOWER)	
*3-728-625-01	ACC INDIVIDUAL CARTON	
** AC-V33	AC POWER ADAPTOR	
*** RFU-89	RF MODULATER	
*** NP-22H	RECHARGABLE BATTERY	

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS A OPTIONAL ACCESSORIES.

****

• HARDWARE LIST

SCREW

7-621-255-15	SCREW +P 2X3
7-621-255-45	SCREW +P 2X6
7-621-281-15	SCREW +P 2X2
7-621-772-00	SCREW +B 2X3
7-627-552-07	SCREW, PRECISION +P 1.7X2.5
7-627-553-37	SCREW, PRECISION +P 2X3 TYPE 3
7-627-850-17	SCREW, PRECISION +P 1.4X2.5
7-627-852-18	SCREW, PRECISION +P 1.7X4 TYPE3
7-627-852-38	SCREW, PRECISION +P 1.7X1.8 TYPE3
7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT
7-685-105-19	SCREW +P 2X8 TYPE2 NON-SLIT
7-685-203-19	SCREW +KTP 2X5 TYPE2 NON-SLIT

STOP RING

7-624-101-01	STOP RING 1.2 (E TYPE)
7-624-102-04	STOP RING 1.5, TYPE -E

CCD-F40/F340

SONY®

SERVICE MANUAL

US Model
Canadian Model
CCD-F40
E Model
CCD-F340

SUPPLEMENT-1

ADJUSTMENTS

File this supplement with the service manual.

- **For Mechanical Adjustments**

  Refer to mechanical adjustment manual "TYPE 3 (O'MECHANISM)" for the adjustments and checks of mechanism section and the mechanical parts replacement except for these on this manual.

  ○ When adjusting the mechanism without the camera block, disconnect the connector and supply 6.5 ±0.1 Vdc to the battery terminal from a regulated power supply as described in "Precaution for Adjustment" in Chapter 3, "Video Section Electrical Adjustment". (See page 25.)

- **Correct the part number as shown below.**

P141

286	A-7949-130-A	DRUM ASSY, UPPER (DGR-20-R)
	↓	
	A-7049-130-A	DRUM ASSY, UPPER (DGR-20-R)

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SECTION 1
CAMERA SECTION ADJUSTMENT

During the adjustment see the parts arrangement diagram for adjustment on page 18.

PREPARATION BEFORE ADJUSTMENT (CAMERA SECTION)

1-1. LIST OF SERVICING JIGS

● Oscilloscope ● AC pack ● Screwdriver ● L wrench ● Stop watch ● Color monitor TV ● Vectorscope

Ref. No.	Name	Part Code	Use
J-1	Filter (C22)	J-6080-829-A	Operation check for auto-following white balance
J-2	ND filter 0.4	J-6080-806-A	IRIS set adjustment,
	ND filter 0.1	J-6080-807-A	IRIS set adjustment,
	ND filter 1.0	J-6080-808-A	MAX gain adjustment, (2 pcs.)
J-3	Pattern box PTB-500*[1]	J-6029-140-A	
J-4	Pattern box color chart	J-6020-250-A	
J-5	Flat cable (flexible cable of 15P)	J-6082-019-A	1 pc.
J-6	Extension cable (7P)	J-6080-917-A	1 pc.
	Extension cable (4P)	J-6080-914-A	2 pcs.
	Extension cable (8P)	J-6080-819-A	1 pc.
	Extension cable K (4P)	J-6080-873-A	1 pc.
J-7	Lens block fixing jig	J-6094-894-A	
J-8	Siemens-star	J-6080-875-A	Flange back adjustment

*[1] The PTB-100 (J-6020-490-A) can also be used.

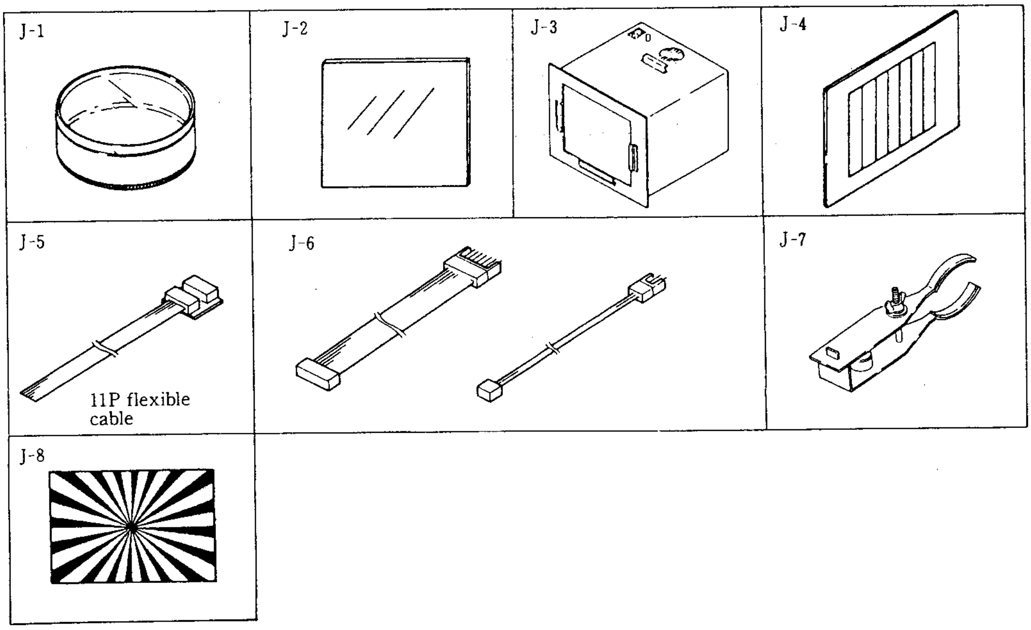


Fig. 1-1

1-2. PREPARATION

Note:

Refer to SECTION 2. DISASSEMBLY as to details for remove the cabinets and boards.

1) Remove the camera cover, VTR panel, cabinet (R) and cabinet (L).
2) Separate the camera section and video section from each other.
3) Open the camera board in the manner mentioned in 2. DISASSEMBLY, 2-5. REMOVING THE VC-38 (CCD IMAGER), VC-39, AND VC-40 BOARDS. (Fig. 1-2.)
4) The video block must be connected for adjustments and checks. Connect the extension cable as shown in Fig. 1-3.

Note:

Connect the electronic viewfinder (EVF) also to CN360 of the VA-40 board.

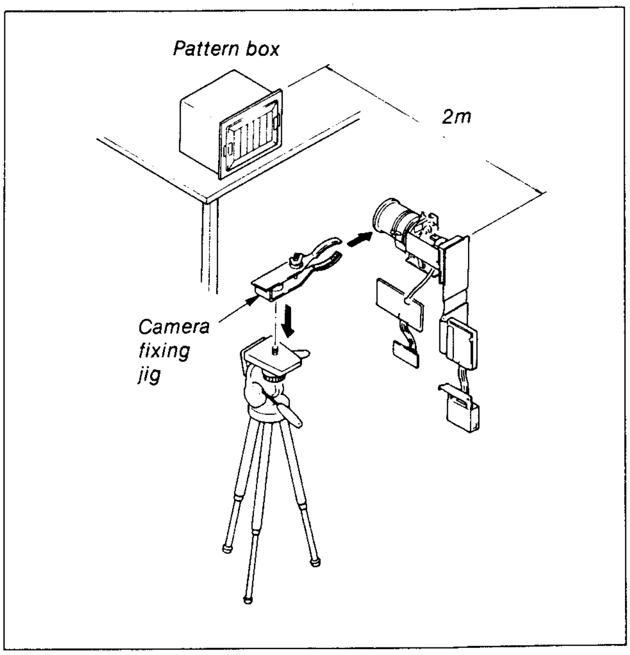
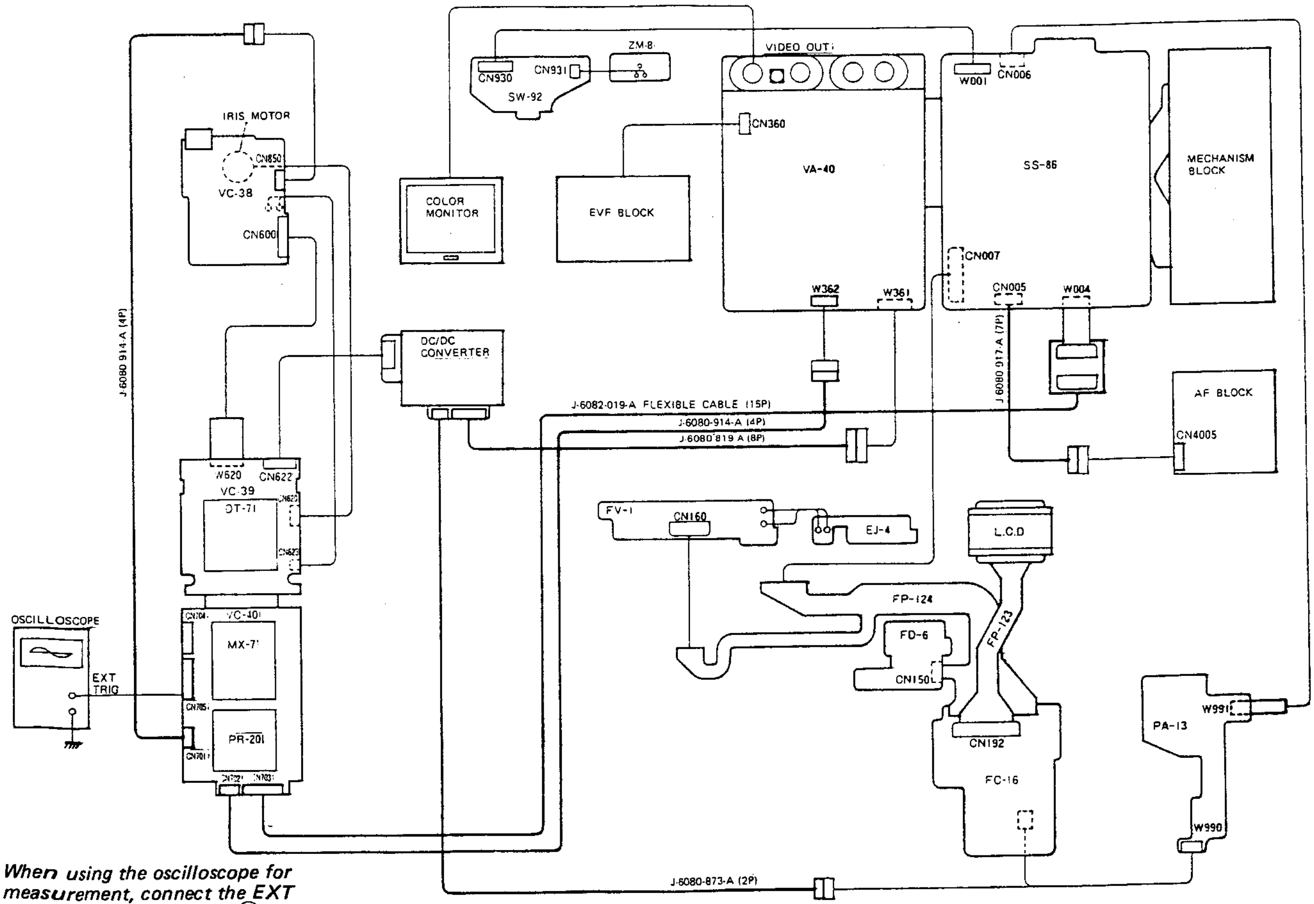

Pattern box
2m
Camera fixing jig

Fig. 1-2


IRIS MOTOR
CN850
VC-38
CN600
J-6080 914-A (4P)
W620
CN622
VC-39
DT-71
CN623
OSCILLOSCOPE
EXT TRIG
CN704
VC-40
MX-7
CN705
PR-201
CN701
CN702
CN703
ZM-8
CN930
CN931
SW-92
COLOR MONITOR
EVF BLOCK
DC/DC CONVERTER
VIDEO OUT
CN360
VA-40
W362
W361
W001
CN006
SS-86
CN007
CN005
W004
MECHANISM BLOCK
J-6080 917-A (7P)
AF BLOCK
CN4005
J-6082-019-A FLEXIBLE CABLE (15P)
J-6080-914-A (4P)
J-6080 819 A (8P)
FV-1
CN160
EJ-4
L.C.D
FP-124
FP-123
FD-6
CN150
CN192
FC-16
PA-13
W991
W990
J-6080-873-A (2P)

When using the oscilloscope for measurement, connect the EXT TRIG IN terminal to pin ⑧ of CN705 (ID) on the VC-40 board to obtain synchronism, unless otherwise specified.

Fig. 1-3

1-3. PRECAUTIONS

1) Setting the switches

Adjust the switches to the following positions, when not specified:

1. Set the FOCUS switch (FC-16 board, S190) to MANUAL

2) Adjustment Procedure

As a rule, adjust in a described order.

3) Subject

1. Color bar chart (standard picture frame)

   Adjust the picture frame as shown in Fig. 1-4. When using a color chart for adjustment. (Standard picture frame).

Color Bar Chart Standard Picture Frame

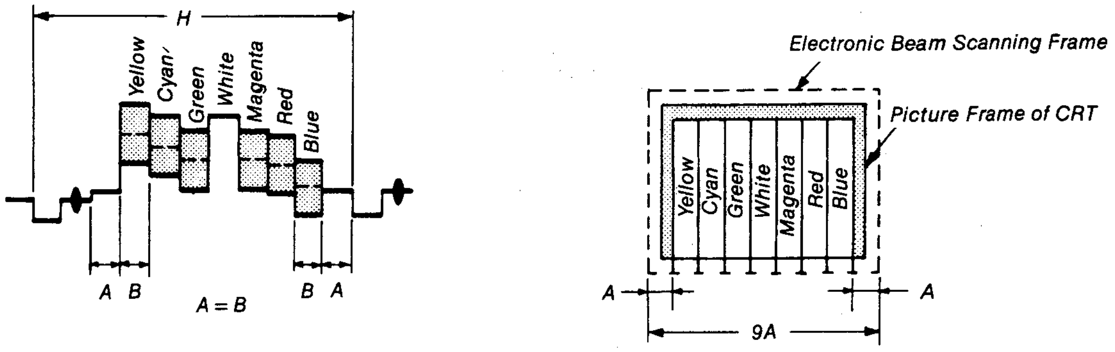

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A = B
B A
Electronic Beam Scanning Frame
Picture Frame of CRT
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
A
9A

Fig. a (Video Output Waveform of Camera block repairing unit)

Fig. b (Picture of Monitor TV screen)

Adjust camera zooming and its direction so that the output waveform in Fig. a and the picture in Fig. b can be obtained.

Fig. 1-4

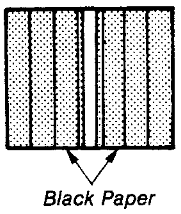
2. Full white pattern

   Remove the color bar chart from the pattern box and shift the zoom lever fully to the TELE (72mm) side.
3. High brightness pattern

   Create a high brightness pattern as shown in Fig. 1-5, and adjust the picture frame as shown in Fig. 1-6.
4. Siemens star (J-6080-875-A)

   Adjust a camera direction so that a siemens star center will coincide with a monitor screen center on the monitor TV screen.

High Brightness Pattern


Black Paper

Leaving only a half of color bar chart's white width intact, cover the rest with black paper, and take a picture with the standard picture frame.

Fig. 1-5

High Brightness Pattern

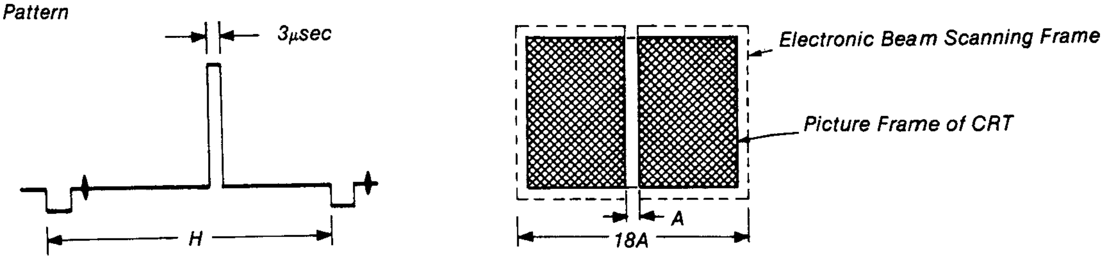

3μsec
H
Electronic Beam Scanning Frame
Picture Frame of CRT
A
18A

Fig. a (Video Output Waveform of Camera block repairing unit)

Fig. b (Picture of Monitor TV Screen)

Adjust camera zooming and its direction so that the output waveform in Fig. a and the picture in Fig. b can be obtained.

Fig. 1-6

1-4. CAMERA SYSTEM ADJUSTMENT

1-4-1. Flange Back Adjustment

Subject	Siemens star at a distance of 2m in the front of a lens datum level (marked with ϕ)
Measurement point	Confirm with the monitor TV.
Measurement equipment	
Adjustment element	Flange back adjustment top
Tools	Regular screwdriver

[Adjustment Method]

1) Set the AUTO LOCK switch (FC-16 board, S190) to a MANUAL position.
2) Place the Siemens star at a distance of 2m in the front of the lens datum level (see Fig. 1-2).
3) Adjust the position of the camera section so that the center of the Siemens star displayed on the monitor screen will coincide with the center of the monitor screen.
4) Check that the lens zoom lever can be rotated fully to WIDE (12mm) and TELE (72mm), and rotate fully to the WIDE side. (Also check that the monitor screen is zooming.)
5) Push the BACK LIGHT button (FC-16 board, S196) to set up BACK LIGHT mode and open iris.
6) Set the stopper rubber "∞" side to the center of three lines on the main mirror tube (see Fig. 1-7).

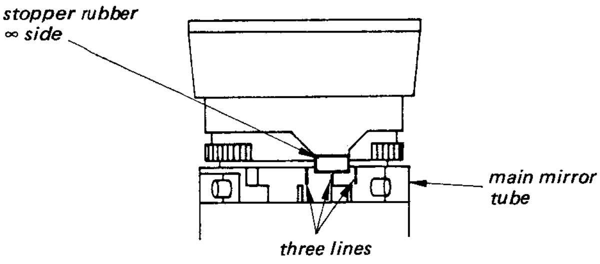


Fig. 1-7

7) Loosen the setscrew. (See Fig. 1-8.)
8) Insert a screwdriver into the hole on the rear of the mirror tube, and rotate the frame of master lens with the edge of the screwdriver.
9) Adjust the focus with rotating the adjustment top so to maximize the contrast of the chart. (With loosening the setscrew.)
10) Readjust the focus with the focus ring.
11) Confirm that the stopper rubber "∞" side is in between the side lines. (When it is out of the side lines, repeat items 8) and 9).)
12) Screw in the setscrew with pressing the adjustment top not to move. (When it moves, repeat items from the item 6).)
13) Confirm with repeat items 10) and 11).

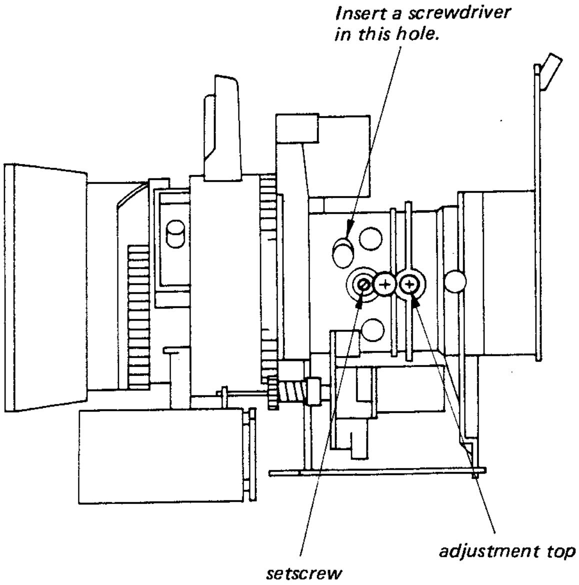


Fig. 1-8

1-4-2. DC-DC Converter Voltage Check (VC-40 Board)

Measurement equipment	Digital voltmeter
5V check	
Specified value	5.00 ±0.05V
Measurement point	Pin ① of CN622
15V check	
Specified value	15.0 ±0.3V
Measurement point	Pin ④ of CN622
32V check	
Specified value	32 ±0.5V
Measurement point	Pin ⑤ of CN622

Note:

Check with the EVF section connected.

[Confirmation Method]

1) Each supply voltage should satisfy its specified value.

1-4-3. Voltage Adjustment (VC-38 Board)

Subject	Arbitrary
Measurement point	Pin ③ of CN601
Measurement equipment	Digital volt meter
Adjustment element	RV600
Specified value	(Voltage printed on Imager) ±0.05Vdc

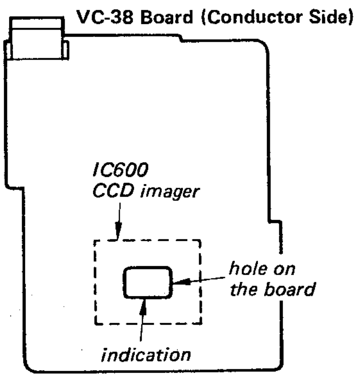
[Adjustment Method]

Adjust with RV600 so that the reading on the digital voltmeter becomes (Voltage pranted on Imager) ±0.05Vdc.

Note:

VSUB standard voltage is indicated by two units, "Integer section simplified code" and "Dicimal section".

integer section simplified code	integral number
1	1
|	|
9	9
A	10
B	11
C	12
D	13
E	14
F	15
G	16
H	17
I	18
J	19
K	20
L	21



Example: F5 is indicated.
The integer is F: 15.
The decimal is 5: 0.5.
Therefore, the V_{SUB} voltage is;
15 + 0.5 = 15.5 (Vdc).

Fig. 1-9

1-4-4. Iris Set Adjustment (VC-39 Board)

Subject	Color bar chart standard picture frame
Filter	ND filters 0.4 and 0.1
Measurement point	Pin ① of CN601 (CCD OUT) on the VC-39 board
Measurement equipment	Oscilloscope
Adjustment element	RV622 (IRIS SET)
Specified value	200 ±5mVp-p

[Adjustment Method]

1) With no ND filter attached, adjust a signal level to 200 ±5mVp-p using RV622.
(Be sure to complete adjustment by turning RV622 in the direction which reduces the signal level.)
2) Attach the ND filter 0.5 (0.4 + 0.1) to the front of the lens, and confirm that the signal level changes smoothly.
3) Detach the ND filter, and confirm that the signal level is 200 ±5mVp-p.
4) When the specified value is not satisfied, repeat the above-mentioned steps 1) through 3).

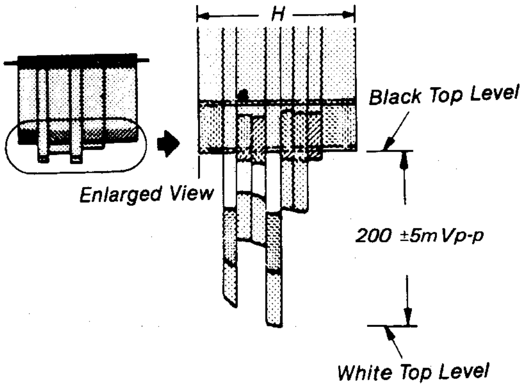


Fig. 1-10.

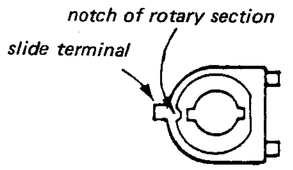
1-4-5. AGC Set Adjustment (VC-39 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ① of CN704 on the VC-39 board
Measurement equipment	Oscilloscope
Adjustment element	RV621 (AGC SET) of the IA-1 board
Specified value	170 ±5mVp-p

Note:

Set to the mechanical center the following RV on the VC-39 board:

1. RV620 (MAX GAIN)



Mechanical center:
The round notch of the RV's rotary section should conform to a position of the slide terminal.

Fig. 1-11

[Adjustment Method]

Adjust a signal level to 170 ±5mVp-p with RV621 of the IA-1 board.

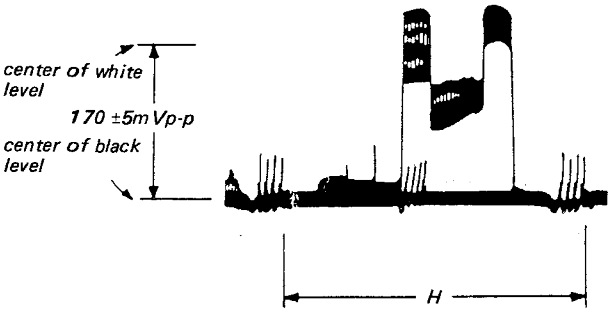


Fig. 1-12

1-4-6. Matrix Adjustment (1) (VC-40 Board)

Subject	Color bar standard picture frame
Measurement point	CH1: Pin ④ of CN704 on VC-40 board (Y_0) CH2: Pin ⑤ of CN704 on VC-40 board (Y_1)
Measurement equipment	Oscilloscope
Adjustment element	RV706 (Y_1 GAIN)
Specified value	$Y_0 = Y_1$

[Adjustment Method]

Adjust with RV706 so to equalize Y_1 level to Y_0 leve.

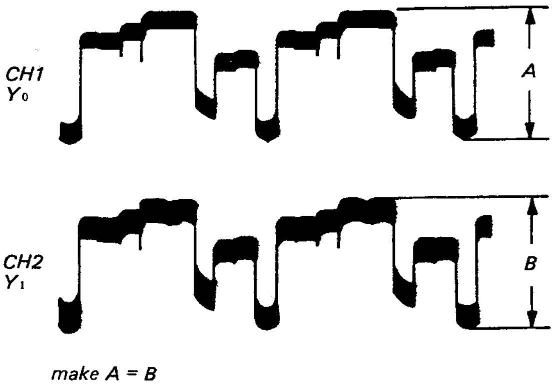


Fig. 1-13

1-4-7. Matrix Adjustment (2) (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	CH1: Pin ⑥ of CN704 on VC-40 board (C_0) CH2: Pin ⑦ of CN704 on VC-40 board (C_1)
Measurement equipment	Oscilloscope
Adjustment element	RV707 (C_1 GAIN)
Specified value	$C_0 = C_1$

[Adjustment Method]

Adjust with RV707 so to equalize C_1 level to C_0 level.

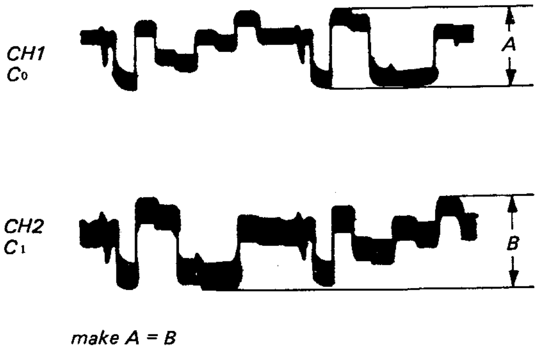


Fig. 1-14

1-4-8. Matrix Adjustment (3) (VC-40 Board)

Subject	Color bar standard picture frame
Measurement point	CH1 (X): Pin ㉑ of PR-20 (HIC) board (B−Y) CH2 (Y): Pin ㉒ of PR-20 (HIC) board (R−Y)
Measurement equipment	Oscilloscope (X−Y mode)
Adjustment element	RV705 (VC-40 board)
Specified value	Minimize the bright points of each color

[Adjustment Method]

Adjust with RV705 so to make the bright points of each color to one point or to minimize.

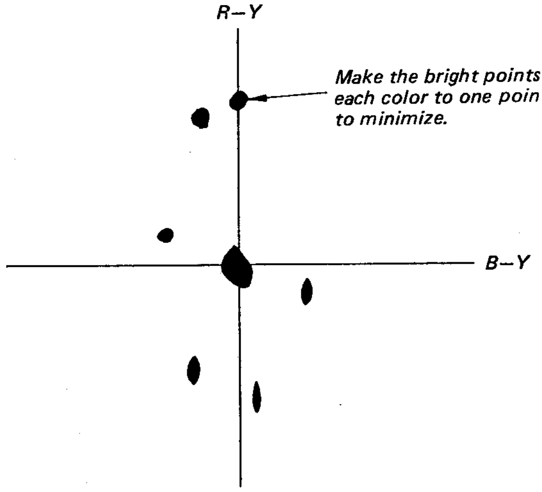

R−Y
Make the bright points of each color to one point or to minimize.
B−Y

Fig. 1-15

1-4-9. Y_H Level Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ④ of CN705 (Y_H OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV701
Specified value	450 ±10mVp-p

[Adjustment Method]

Adjust with RV701 so that the white level becomes 450 ±10mVp-p.

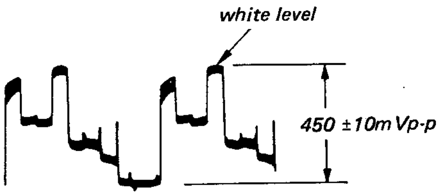


Fig. 1-16

1-4-10. Chroma Level Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ② of CN705 (Gr/G WB)
Measurement equipment	Oscilloscope
Adjustment element	RV710 (C LEVEL)
Specified value	400 ±10mVp-p

[Connection]

Before adjusting, make short-circuit between pin ③ of CN705 on VC-40 board and GND.

[Adjustment Method]

Adjust with RV710 so that the chroma level becomes 400 ±10mVp-p.

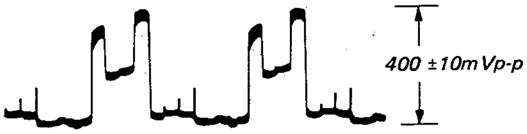


Fig. 1-17

1-4-11. Burst Level Adjustment (VC-40 Board)

Subject	All black (Cover the lens with a black cap)
Measurement point	Pin ① of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV722
Specified value	190 ±5mVp-p

[Adjustment Method]

Adjust with RV722 so that the burst level becomes 190 ±5mVp-p.

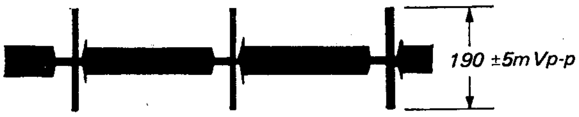


Fig. 1-18

1-4-12. Pre-White Balance Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ① of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV708 (R GAIN) RV709 (B GAIN)
Specified value	Minimize white portion carrier

[Adjustment Method]

Adjust with RV708 and RV709 mutually so to minimize the white portion carrier.

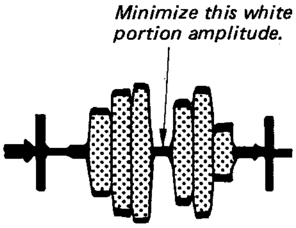


Fig. 1-19

1-4-13. Color Reproducibility Adjustment (Use a Vectorscope) (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	J361 on VA-40 board (VIDEO OUT)
Measurement equipment	Vectorscope
Adjustment element	RV714 (B−Y GAIN) RV715 (R−Y GAIN) RV712 (B−Y HUE) RV713 (R−Y HUE)
Specified value	Each color bright point should be within a color reproduction frame. (See Fig. 1-20)

[Adjustment Method]

Adjust with RV714, RV715, RV712, and RV713 mutually so to place each color bright point within the color reproduction frame.

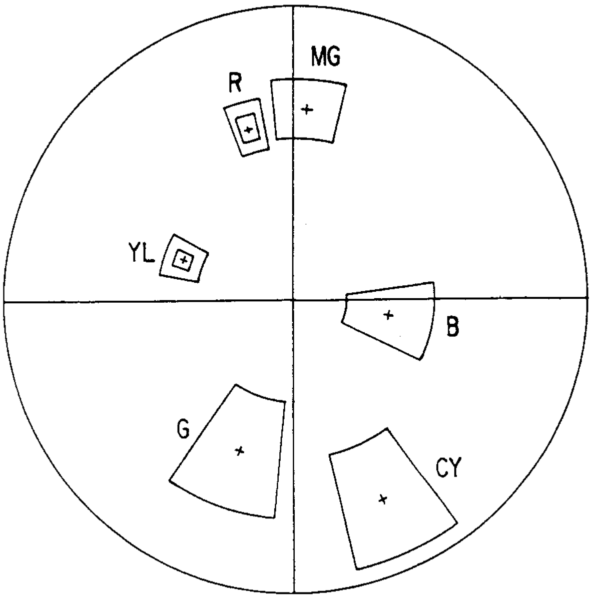
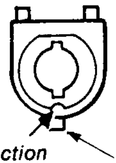


Fig. 1-20

1-4-14. Color Reproducibility Adjustment (Use an Oscilloscope)

A. Gain Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ① of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV714 (B−Y GAIN) RV715 (R−Y GAIN)
Specified value	"red" level: 340 ±20mVp-p "Yellow" level: 240 ±15mVp-p



Mechanical center: The round notch of the RV's rotary section should coincide with the position of the slide terminal.

Fig. 1-21

[Adjustment Method]

1) Set RV712 (B−Y HUE) and RV713 (R−Y HUE) on the VC-40 board to the mechanical center. (See Fig. 1-21.)
2) Adjust an amplitude of "red" to 340 ±20mVp-p with RV715.
3) Adjust an amplitude of "yellow" to 240 ±15mVp-p with RV714.

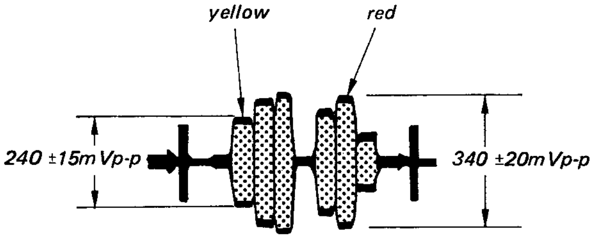

yellow
red
240 ±15m Vp-p
340 ±20m Vp-p

Fig. 1-22

B. HUE Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	CH1 (X): Pin ㉑ of PR-20 (HIC) board (B−Y) CH2 (Y): Pin ㉒ of PR-20 (HIC) board (R−Y)
Measurement equipment	Oscilloscope (X−Y mode)
Adjustment element	RV712 (B−Y HUE) RV713 (R−Y HUE)
Specified value	Each color bright point should be within the color reproduction frame.

[Adjustment Method]

Place a "red" bright point and a "yellow" bright point within the color reproduction frame with RV712 and RV713.

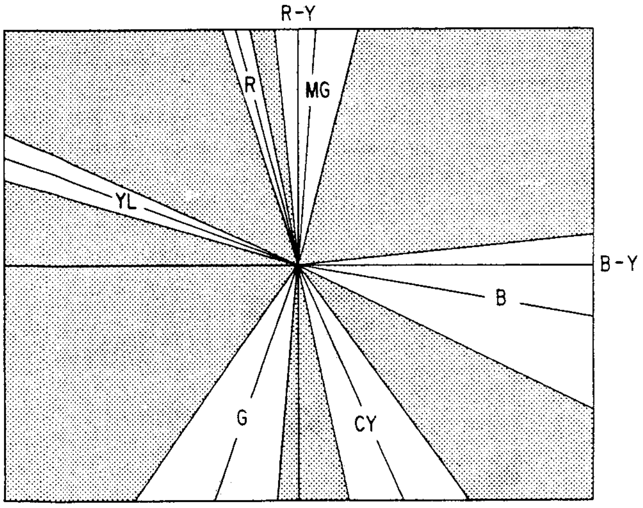

R-Y
R
MG
YL
B-Y
B
G
CY

Fig. 1-23

1-4-15. Setup Adjustment (VC-40 Board)

Subject	All black (Cover the lens with a black cap)
Measurement point	Pin ③ of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV719
Specified value	50 ±5mVp-p

[Adjustment Method]

Adjust a setup level to 50 ±5mVp-p with RV719.

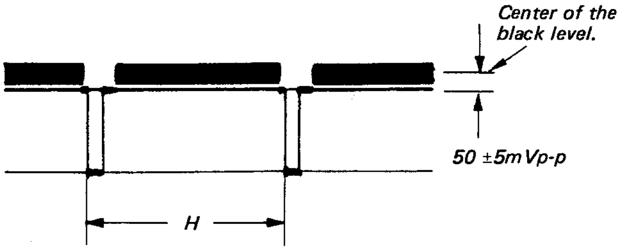

Center of the black level.
50 ±5m Vp-p
H

Fig. 1-24

1-4-16. SYNC Level Adjustment (VC-40 Board)

Subject	All black (Cover the lens with a black cap)
Measurement point	Pin ③ of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV720
Specified value	285 ±5mVp-p

[Adjustment Method]

Adjust with RV720 so that the SYNC level becomes 285 ±5mVp-p.

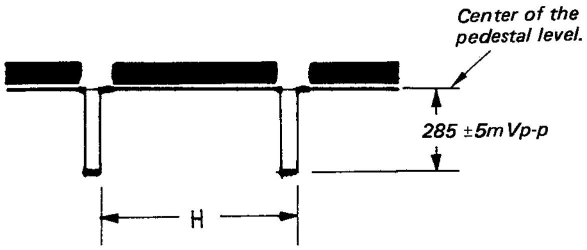

Center of the pedestal level.
285 ±5m Vp-p
H

Fig. 1-25

1-4-17. White Clip Adjustment (VC-40 Board)

Subject	High brightness pattern
Measurement point	Pin ③ of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV718
Specified value	840 ±20mVp-p

Note: Set RV717 as Fig. 1-26.

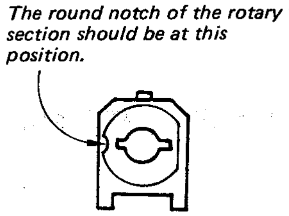

The round notch of the rotary section should be at this position.

Fig. 1-26

[Adjustment Method]

1) Adjust a signal level to 840 ±20mVp-p with RV718.
2) Perform Y Level Adjustment.

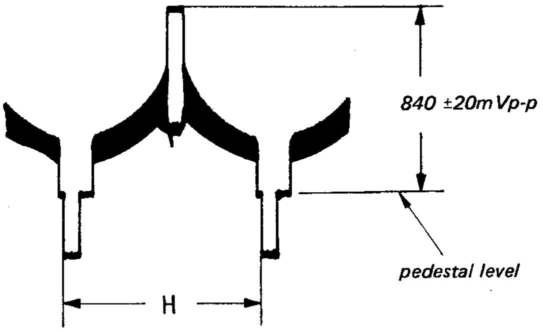

840 ±20m Vp-p
pedestal level
H

Fig. 1-27

1-4-18. Y Level Adjustment (VC-40 Board)

Subject	Color bar chart (Standard picture frame)
Measurement point	Pin ③ of CN702 (Y OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV717
Specified value	650 ±10mVp-p

[Adjustment Method]

Adjust the Y level to 650 ±10mVp-p with RV717.

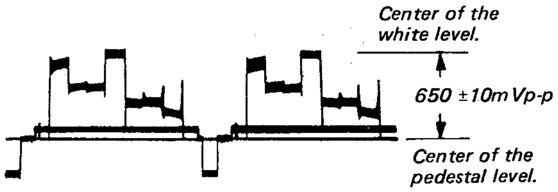

Center of the white level.
650 ±10m Vp-p
Center of the pedestal level.

Fig. 1-28

1-4-19. Aperture Adjustment (VC-40 Board)

Subject	Color bar chart standard picture frame
Measurement point	Pin ③ of CN702 (Y OUT)
Measurement equipment	Oscilloscope
Adjustment element	RV716
Specified value	150 ±5mV

[Adjustment Method]

Adjust with RV716 so that the level between the peak between magenta and white and the center of the white level becomes 150 ±5mV.

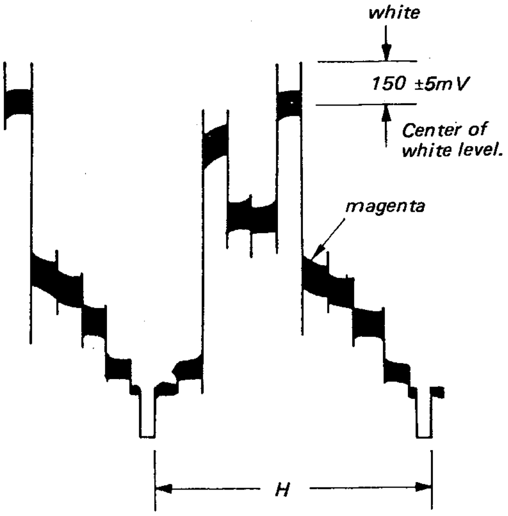

white
150 ±5m V
Center of white level.
magenta
H

Fig. 1-29

1-4-20. Max. Gain Adjustment (VC-39 Board)

Subject	Color bar chart standard picture frame
Filter	ND filter 1.0 . . . 2 pcs. and 0.4 . . . 1 pc.
Measurement point	Pin ③ of CN702 (VC-40 board)
Measurement equipment	Oscilloscope
Adjustment element	RV602
Specified value	360 ±10mVp-p

[Adjustment Method]

1) Cover an ND filter 2.4 (1.0 + 1.0 + 0.4) in front of the lens.
2) Adjust to 360 ±10mVp-p with RV602.

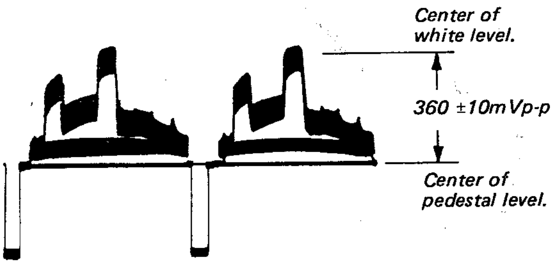


Fig. 1-30

1-4-21. Auto-following White Balance Adjustment (VC-38 Board)

Subject	White pattern *Note 1)
Measurement point	CH1: Pin ④ of CN850 (R CONT) CH1: Pin ③ of CN850 (B CONT)
Measurement equipment	Oscilloscope (DC range)
Adjustment element	RV850

Note 1:

Make white-balance sensor (VC-38 board SB850) incident by light through white-dispersing plate which can be applied with the conventional white-lens cap of camera.

Note 2:

No exact adjustment is made by the incident light except pattern-box to the white-balance box.

It is desirable to make adjustment in a dark room, but if it is impossible, make adjustment after taking the following procedures.

1. Place the camera on black paper.
   (This procedure is necessary for the adjustment in a dark room.)
2. Approach the distance between camera and pattern box to less than 0.5m.
3. Cover a black paper on white-balance sensor for preventing the incident light except pattern box to the white-balance sensor.

[Connection]

1) Short-circuit CN851 pins ① and ② on VC-38 board to ground.

[Adjustment Method]

1) Turn RV850, and confirm that CH1 takes 2 values of "L" (0.5Vdc) and "H" (1.0Vdc), also that CH2 takes 2 values of "L" (1.0Vdc) and "H" (1.9Vdc).
2) Turn RV850 slowly, and stop it when CH1 shows the position of "L" (0.5Vdc) and CH2 shows the position of "H" (1.9Vdc).

1-4-22. Check for Auto-following White Balance

Subject	All white pattern
Measurement point	CH1 (X): Pin ㉑ of PR-20 (HIC) board CH2 (Y): Pin ㉒ of PR-20 (HIC) board
Measurement equipment	Oscilloscope (X–Y mode)

[Checking Method]

Confirm the white bright point is its original point.

1-4-23. Check for Backlight Compensation

Subject	Color bar chart standard image frame
Measurement point	J361 on VA-40 board (VIDEO OUT)
Measurement equipment	Oscilloscope

[Confirmation Method]

1) Push the button for backlight compensation (FC-16 board S196).
2) Confirm the output level becomes higher.

1-5. AUTO FOCUS SYSTEM ADJUSTMENT

1-5-1. SPC Parallax Adjustment

Subject	SPC prallax adjusting chart (See Fig. 1-31)
Measurement point	Monitor TV
Measurement equipment	Monitor TV
Adjustment element	SPC board
Adjustment tool	Phillips headed screwdriver
Specified value	Coincidence SPC position with the light from the pattern box.

[Adjustment Method]

1) Set the chart to the pattern-box, and install it 3m distance from the front lens.
2) Set the center of the chart on the monitor TV screen to the center of the monitor TV screen, and focus.
3) Loosen two screwsⓐ. (See Fig. 1-32.)

   Note:

   Remove the locking compound not to move the SPC board when installating by screw-in.
4) Make coincidence SPC position with the light from the pattern box by moving SPC board. And screw in the screwⓐ.

   Note:

   Attach importance to the upper and lower directions.
5) Apply suitable locking compound.

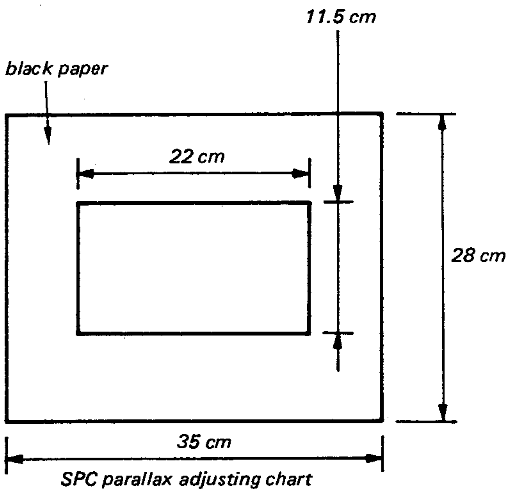


Fig. 1-31

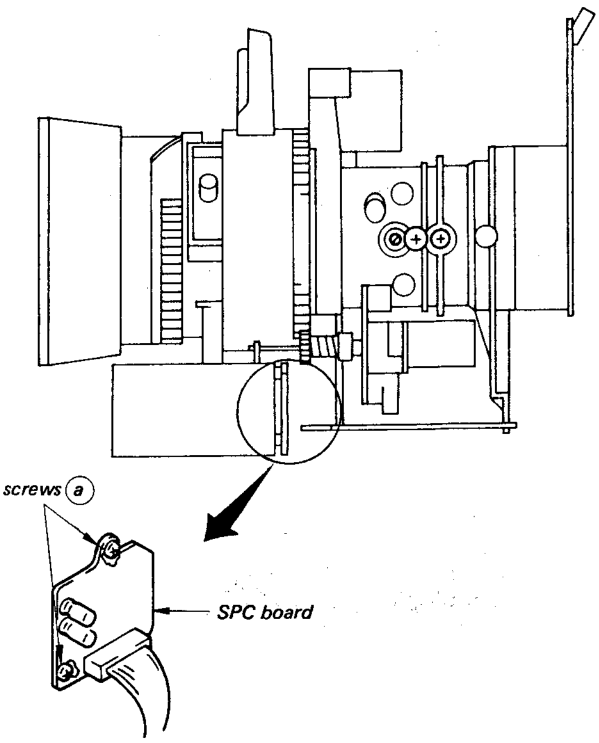


Fig. 1-32

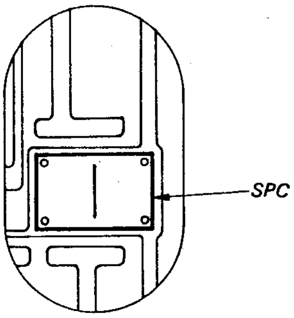


Fig. 1-33

1-5-2. AF Range Finder Adjustment

Subject	AF range finding chart (see Fig. 1-34)
Measurement point	Monitor TV
Measurement equipment	Monitor TV
Adjustment element	Range finder adjusting screw
Adjustment tool	Hexagonal wrench (1.25mm)

[Adjustment Method]

1) Set the chart 2m distance from the front lens.
2) Set the zoom lever to "TELE" side, and the center of the chart to the center of the monitor TV screen.
3) Insert the hexagonal wrench to the hole on the bottom of the set, and focus with turning the AF adjusting screw. (See Fig. 1-35.)
4) Rotate the focus ring by hand to "∞" side and "1.2m" side, and release it. In this time, confirm not to overrun the focus (once just focusing and again out of focus).
5) When overrunning the focus, repeat items 3) and 4).
6) Put on the lid to the hole for AF adjustment on the cabinet.

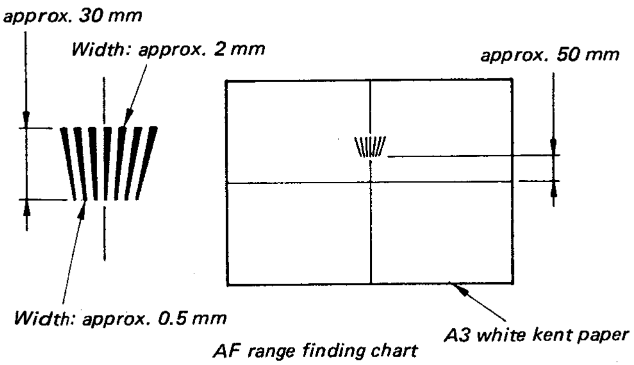

approx. 30 mm
Width: approx. 2 mm
approx. 50 mm
Width: approx. 0.5 mm
AF range finding chart
A3 white kent paper

Fig. 1-34

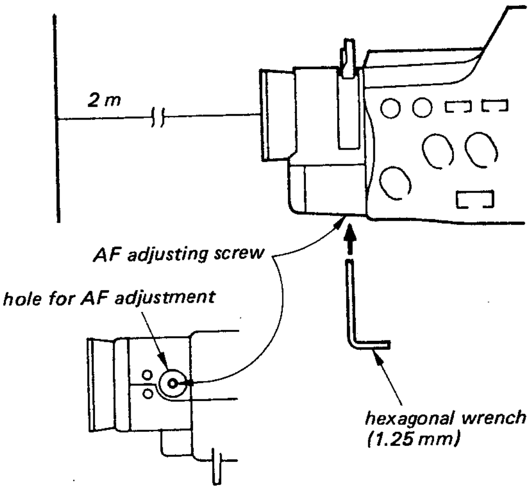

2 m
AF adjusting screw
hole for AF adjustment
hexagonal wrench
(1.25 mm)

Fig. 1-35

1-6. DATA DISPLAY/DIGITAL TITLER BLOCK ADJUSTMENT

1-6-1. AD Converter Level Adjustment (SS-86 Board)

Mode	Camera standby
Subject	All black (Cover lens with black cap)
Measurement point	+ probe: Pin ② of IC203 − probe: Pin ③ of IC203
Measurment equipment	Digital voltmeter
Adjustment element	RV200
Specified value	385 ±5mVdc

[Adjustment Method]

Adjust to 385 ±5mVdc with RV200.

1-6-2. Chroma Blanking Level Adjustment (VC-40 Board)

Mode	Camera standby
Subject	All black (Cover the lens with a black cap)
Measurement point	Pin ① of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV711
Specified value	Minimize the carrier

[Adjustment Method]

1) Press "TITLE 1" (S191 on FC-16 board) or "TITLE 2" (S192 on FC-16 board) button.
2) Memorize 'All black' by pressing "MEMORY" button.
3) Select white by pressing "COLOR" button.
4) Minimize the carrier with RV711.

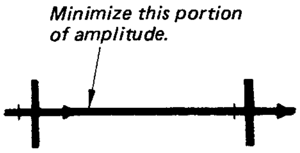

Minimize this portion
of amplitude.

Fig. 1-36

1-6-3. TITLER Y Y Level Adjustment (VC-40 Board)

Mode	Camera standby
Subject	All black (Cover the lens with a black cap)
Measurement point	Pin ③ of CN702
Measurement equipment	Oscilloscope
Adjustment element	RV724
Specified value	570 ±10mVp-p

[Adjustment Method]

1) Press "TITLE 1" (S191 on FC-16 board) or "TITLE 2" (S192 on FC-16 board) button.
2) Memorize 'All black' by pressing "MEMORY" button.
3) Select white by pressing "COLOR" button.
4) Adjust with RV724 to 570 ±10mVp-p.

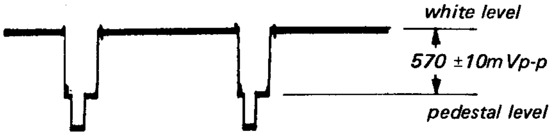

white level
570 ±10m Vp-p
pedestal level

Fig. 1-37

1-6-4. PLL Error Voltage Adjustment (SS-86 Board)

Mode	Standby camera
Object	Optional
Measurement point	See Fig. 1-38.
Meter	Digital voltmeter
Adjustment device	CT200
Specified value	2.5 ±0.05V

[Adjustment Method]

1) Press the TITLE 1 button (S191 on the FC-16 board).
2) Check that the voltage at pin ㊹ of IC202 is higher than 4.0V.
3) Press the MEMORY button (S193 on the FC-16 board).
4) Adjust CT200 to set the voltage at the 2.5 ±0.05V measurement point shown in Fig. 1-38.

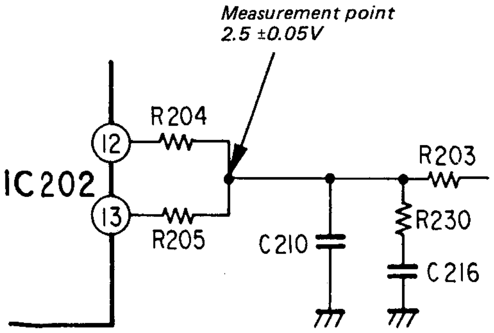
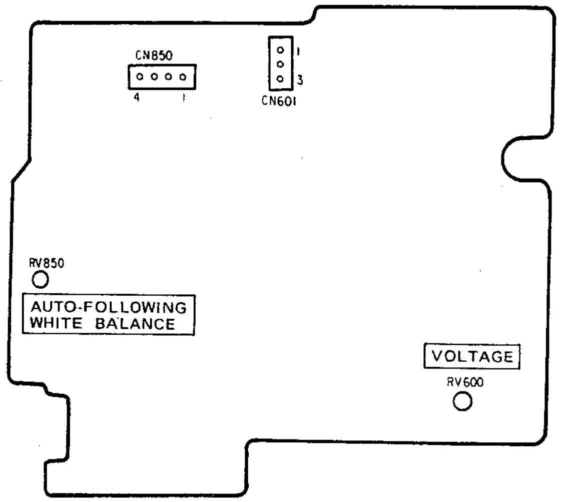

Measurement point
2.5 ±0.05V
R204
⑫
IC202
⑬
R205
C210
R203
R230
C216

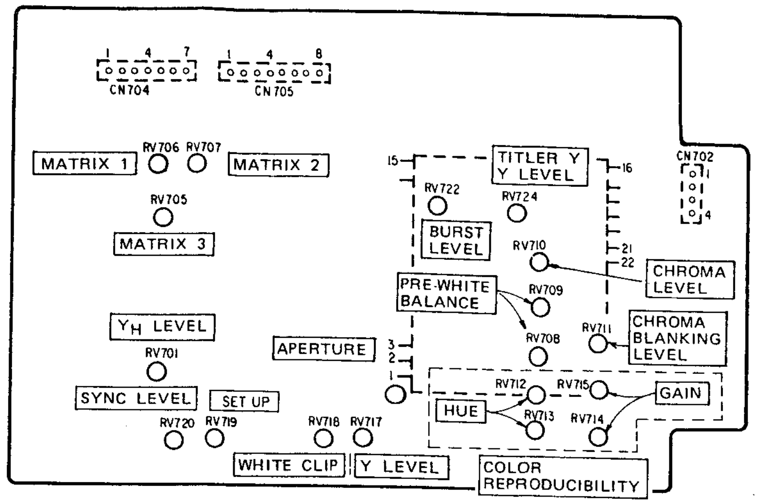
Fig. 1-38

1-7. CAMERA SECTION PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

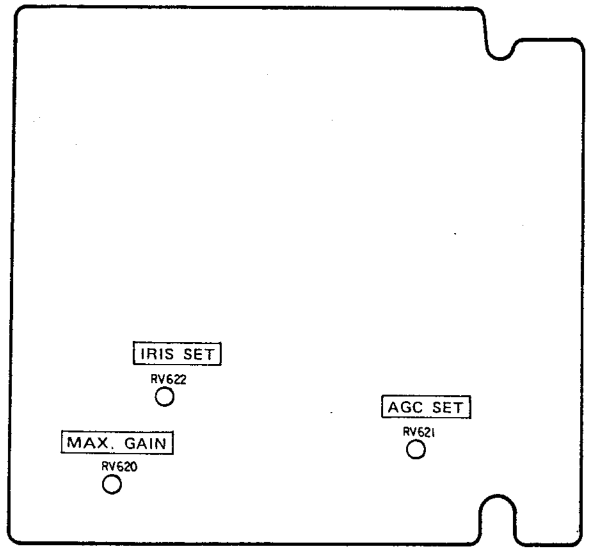
VC-38 BOARD (Conductor side)


CN850
4
1
1
3
CN601
RV850
AUTO-FOLLOWING WHITE BALANCE
VOLTAGE
RV600

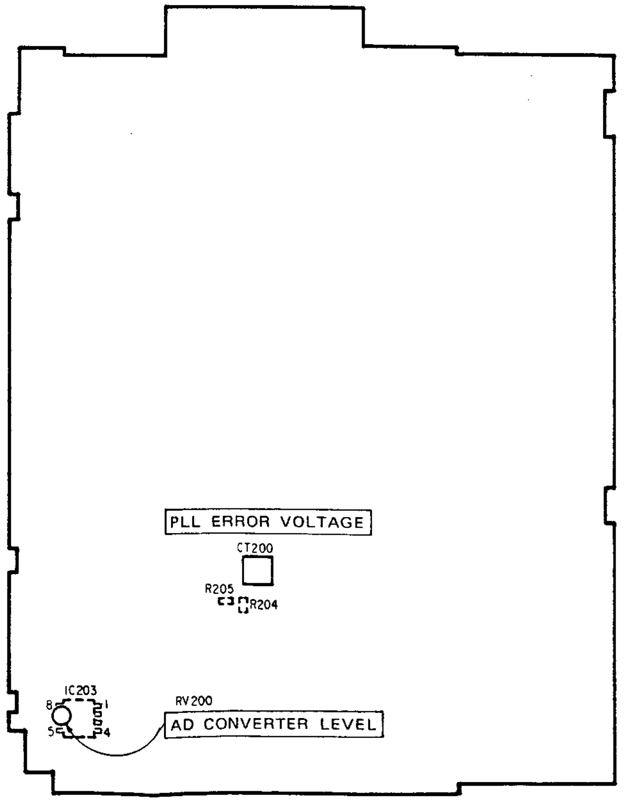
VC-40 BOARD (Conductor side)


1
4
7
CN704
1
4
8
CN705
MATRIX 1
RV706
RV707
MATRIX 2
RV705
MATRIX 3
15
TITLER Y
Y LEVEL
16
CN702
1
4
RV722
RV724
BURST LEVEL
RV710
21
22
CHROMA LEVEL
PRE-WHITE BALANCE
RV709
RV711
CHROMA BLANKING LEVEL
RV708
YH LEVEL
RV701
APERTURE
3
2
1
RV712
RV715
GAIN
HUE
RV713
RV714
SYNC LEVEL
SET UP
RV720
RV719
RV718
RV717
WHITE CLIP
Y LEVEL
COLOR REPRODUCIBILITY

VC-39 BOARD (Conductor side)


IRIS SET
RV622
AGC SET
RV621
MAX. GAIN
RV620

SS-86 BOARD (Conductor side)


PLL ERROR VOLTAGE
CT200
R205
R204
IC203
8
1
5
4
RV200
AD CONVERTER LEVEL

SECTION 2
MECHANICAL ADJUSTMENT

Refer to Section 2 DISASSEMBLY on the service manual for the removal of cabinet and each printed circuit board.

2-1. LENS SECTION REMOVAL

2-1-1. Camera Frame Removal

1) Remove two screws ❶ and VC shield case ❷.
2) Remove the camera frame ❸.
3) Remove AF shield plate ❹ and AF cover ❺.

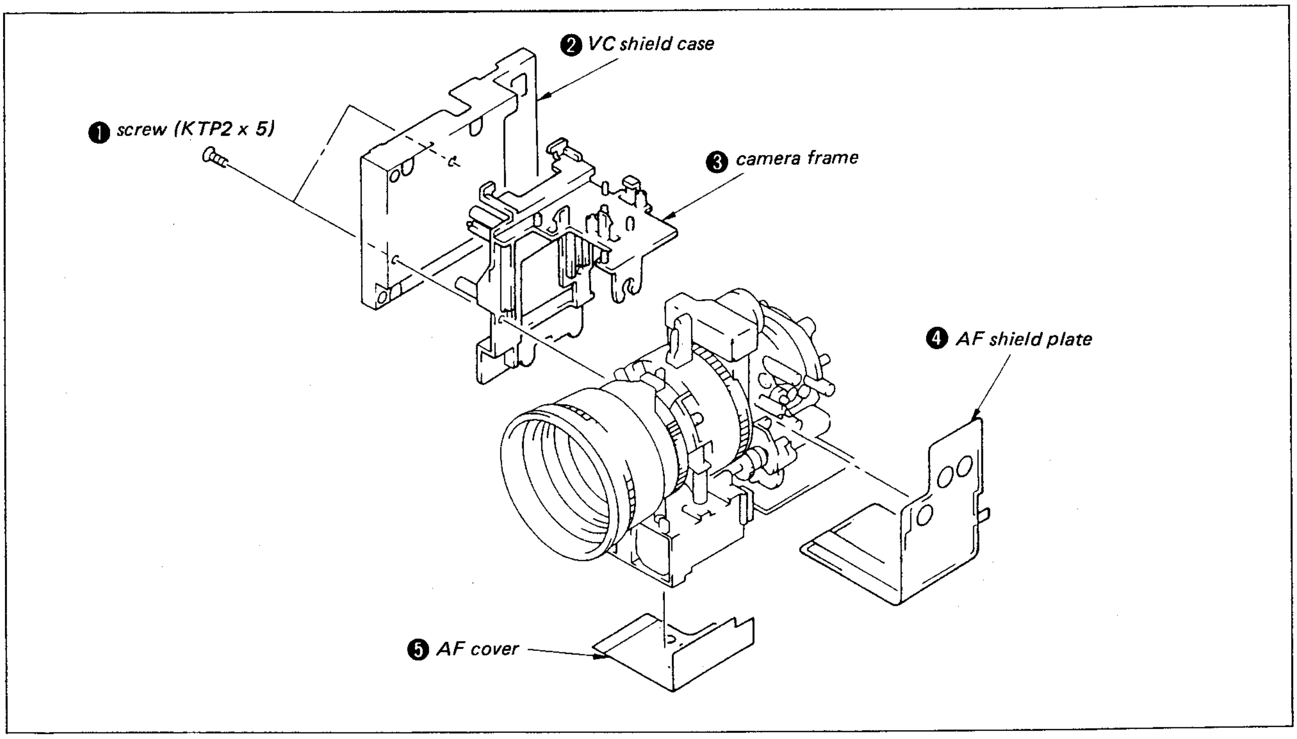

❷ VC shield case
❶ screw (KTP2 x 5)
❸ camera frame
❹ AF shield plate
❺ AF cover

Fig. 2-1

2-1-2. AF Board Removal (See Fig. 2-2.)

1) Remove a screw ❶ and AF board ❷.
2) Remove four connectors ❸.

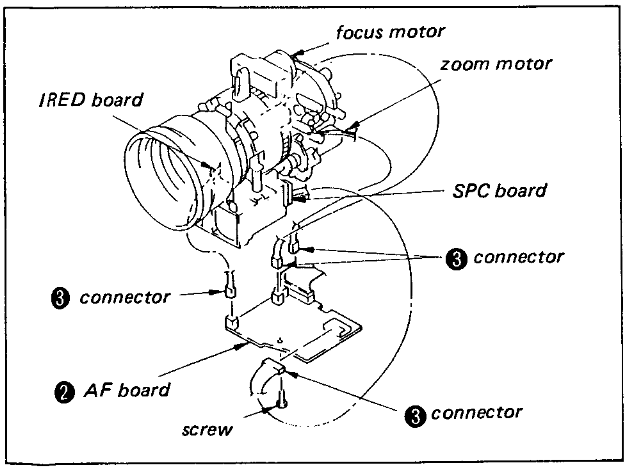

focus motor
zoom motor
IRED board
SPC board
❸ connector
❸ connector
❷ AF board
screw
❸ connector

Fig. 2-2

2-1-3. Focus Motor and Zoom Motor Removal
(See Fig. 2-3.)

1) Remove a screw ❶ and the zoom motor ❷.
2) Remove a screw ❸ and the focus motor ❹.

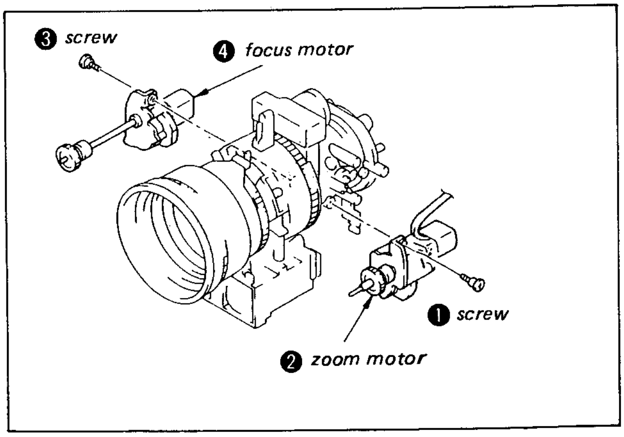

❸ screw
❹ focus motor
❶ screw
❷ zoom motor

Fig. 2-3

2-1-4. AF Block Removal (See Fig. 2-4.)

1) Remove two screws ❶ and then the AF block ❷.

Note 1: The screw hole on the IRED mirror tube side is hidden by a tape. Don't forget to put a tape on setting up.

Note 2: On setting up the AF block, confirm the prism arm ⓑ is geared with the focus ring cam surface ⓐ correctly.

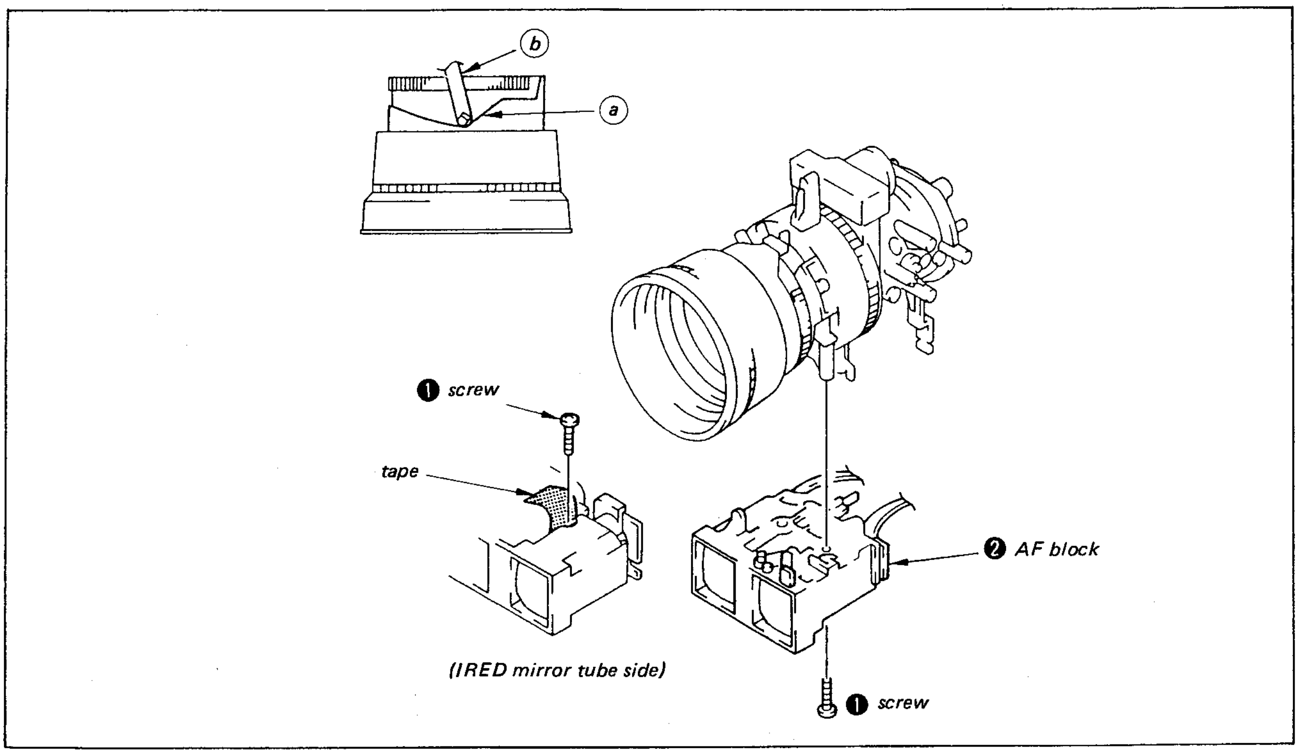

ⓑ
ⓐ
❶ screw
tape
❷ AF block
(IRED mirror tube side)
❶ screw

Fig. 2-4

2-1-5. Relay Mirror Tube Unit Removal (See Fig. 2-5.)

1) Remove two screws ❶.
2) Remove the eccentric roller ❷, and the relay mirror tube unit ❸.

Note: After setting up, do the back focus adjustment.

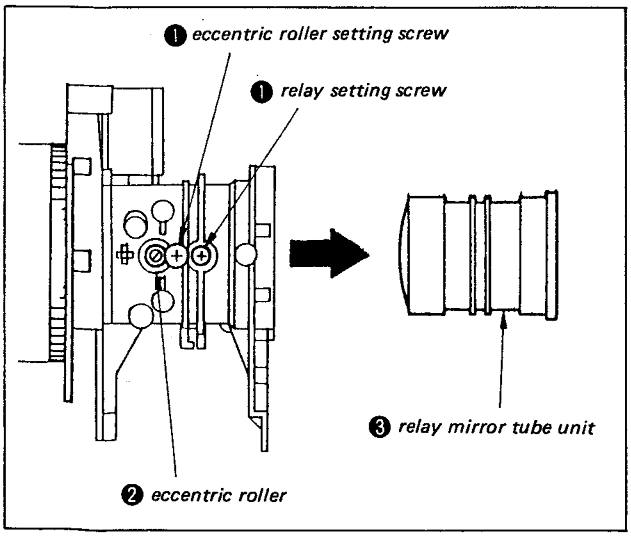

❶ eccentric roller setting screw
❶ relay setting screw
❸ relay mirror tube unit
❷ eccentric roller

Fig. 2-5

2-1-6. Iris Motor Removal (See Fig. 2-6.)

1) Remove the shading plate ❶.
2) Remove a screw ❷ and the iris motor ❸.

Note: After removing, don't break the iris feathers. The iris feathers are easy to removed, therefore set the feathers correctly using tweezers not by hand.

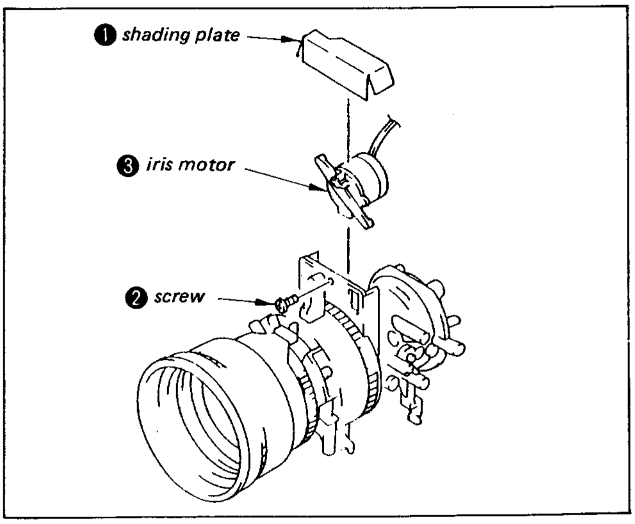
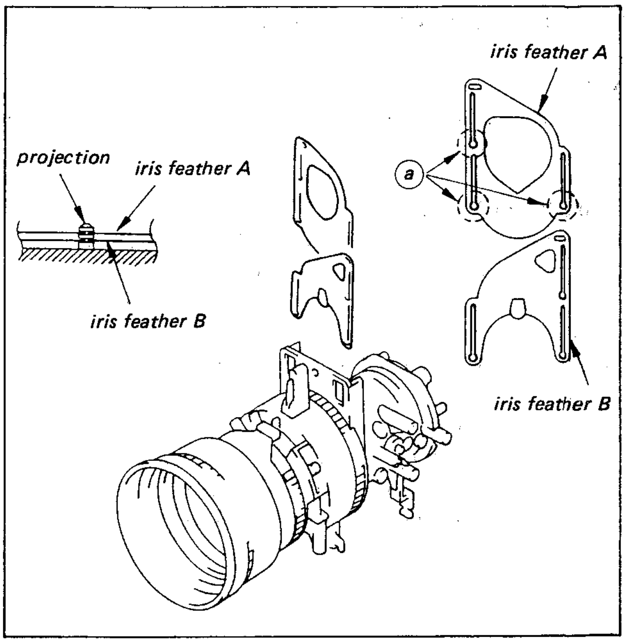

❶ shading plate
❸ iris motor
❷ screw

Fig. 2-6

2-1-7. Iris Feathers Removal (See Fig. 2-7.)

1) Remove the iris motor. (See item 2-1-6.)
2) Remove the iris feather A by setting the ⓐ portion and the projection for feather.
3) As the same rule, remove the iris feather B.
   Note: Use tweezers not hands.



iris feather A
projection
iris feather A
ⓐ
iris feather B
iris feather B

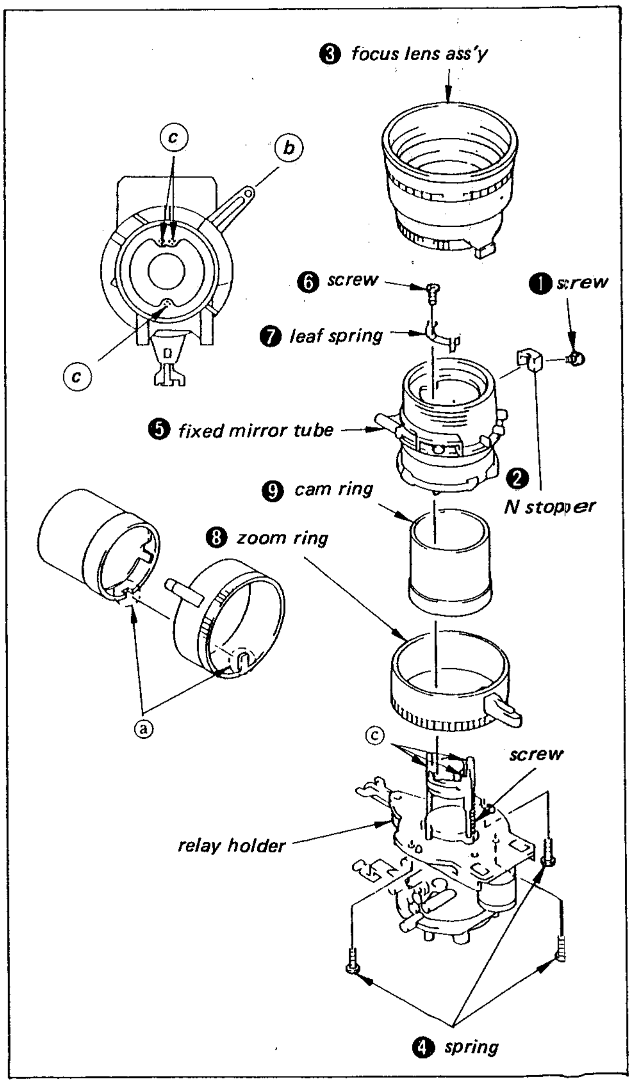
Fig. 2-7

2-1-8. Zoom Ring Removal (See Fig. 2-8.)

1) Remove AF board, focus motor, zoom motor, and the AF block. (See items 2-1-2 to 2-1-4.)
2) Remove a screw ❶ and N stopper ❷.
3) Remove the focus lens ass'y ❸.
4) Set the focus side on the bottom, and remove three screws ❹.
5) Without removing the fixed mirror ❺, turn the set upside down.
6) Set the zoom lens to "TELE" side, and remove a screw ❻ and the leaf spring ❼.
7) Pull up straightly the fixed mirror tube ❺ slowly.
   Note: Be careful about spring.
8) Release the zoom ring ❽ and the cam ring ❾ from the fixed mirror tube.

2-1-9. Zoom Ring Setting (See Fig. 2-8.)

1) Set the cam ring ❾ and the zoom ring ❽ to the fixed mirror tube ❺.
   Note: Set the position a of the cam ring and the zoom ring.
2) Install the fixed mirror tube slowly and straightly down.
   Note: Set the ⓒ position of the relay holder to the positioning hole on the fixed mirror tube.
3) Set the zoom lens to "TELE" side, mount the leaf spring ❼ and screw in the screw ❻.
   Note: Move the zoom "TELE" ↔ "WIDE" confirm it moves smoothly.
4) Set the focus side on the buttom not to move the fixed mirror tube, and screw in three screws ❹.
5) Install the focus lens ass'y to the fixed mirror tube.
6) Screw in the N stopper ❷ with a screw ❶.
7) Mount the AF block, focus motor, zoom motor, and AF board. (See items 2-1-2 to 2-1-4.)
8) Confirm the AF range finding. When out of order, do the AF range finder adjustment. (See item 1-5-2.)



❸ focus lens ass'y
ⓒ
ⓑ
❻ screw
❶ screw
❼ leaf spring
ⓒ
❺ fixed mirror tube
❾ cam ring
❷
N stopper
❽ zoom ring
ⓐ
ⓒ
screw
relay holder
❹ spring

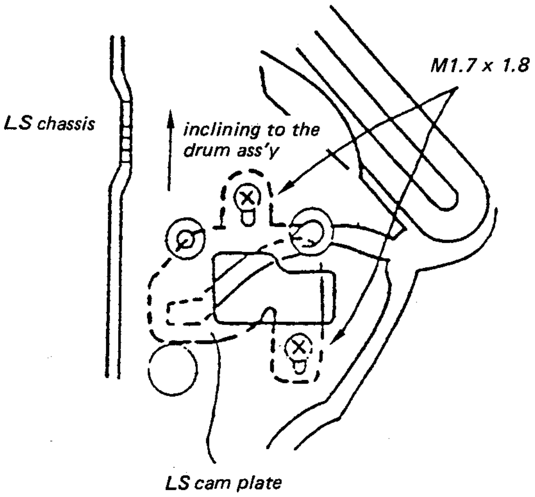
Fig. 2-8

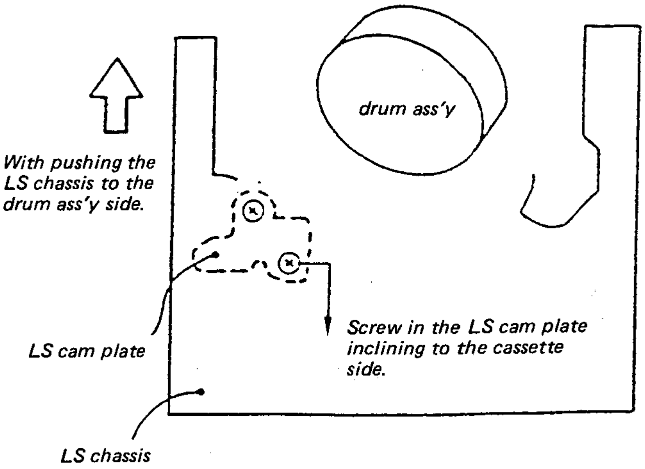
2-2. LS CAM PLATE ADJUSTMENT

Note: When replacement of LS chassis, LS cam plate, mechanical chassis, or LS gear C, need to be done this adjustment.

[Adjustment Method]

1) Temporally screw in the LS cam plate to the rear side of the LS chassis, and apply some grease to the gap. (With two screws M1.7 x 1.8 screw in inclining to the drum ass'y.)
2) After installing the LS chassis to the mechanical chassis:
   1 Loosen two screws M1.7 x 1.8.
   2 With pushing the LS chassis to the drum ass'y side,
   3 screw in the LS cam plate inclining to the cassette side (the opposite side of the drum ass'y).


M1.7 x 1.8
LS chassis
inclining to the drum ass'y
LS cam plate


drum ass'y
With pushing the LS chassis to the drum ass'y side.
Screw in the LS cam plate inclining to the cassette side.
LS cam plate
LS chassis

SECTION 3
ELECTRICAL ADJUSTMENT (VIDEO SYSTEM)

During the adjustment, see the parts arrangement diagram for adjustments on page 40.

The following measuring instruments are needed in adjusting the VTR section:

[Equipment required]

1) Monitor TV
2) Oscilloscope Dual-trace, Bandwidth more than 10MHz with delay mode (Use a probe of 10:1, unless otherwise specified.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
19) Stabilized power supply unit
11) Alignment tape
    For tracking adjustment (WR5-1N)
    Part number: 8-967-995-01
    For video frequency response adjustment (WR5-6N)*[1]
    Part number: 8-967-995-12
    For operation check (WR5-4NL)*[2]
    Part number: 8-967-995-51
    For operation check (WR5-4NSP)*[3]
    Part number: 8-967-995-41

*[1]: WR5-2N (8-967-995-11) is also available.
*[2]: WR5-3NL (8-967-995-31) is also available.
*[3]: WR5-3NSP (8-967-995-42) is also available.

[Precaution for adjustment]

Except "Battery Failure Adjustment" in System Control Adjustment and "EVF display position adjustment" in Video System Adjustment. The video section can be also adjusted without the camera section. Remove the camera section by disconnecting the following 4 connectors:

1. VC-39 board CN622
2. VC-40 board CN702
3. VC-40 board CN703
4. SS-86 board CN005

EVF (Electrical View Finder) section is only neccessary for "Battery failure adjustment". Remove the section by disconnecting the following connector.

1. VA-40 board CN360

MIC board (MC-24 board) is not neccessary for Video section adjustment. Remove the board by disconnecting the following connector.

1. VA-40 board CN361

[Equipment connection]

Unless otherwise specified, adjustment is made by connecting the measuring instruments as shown in the figure below.

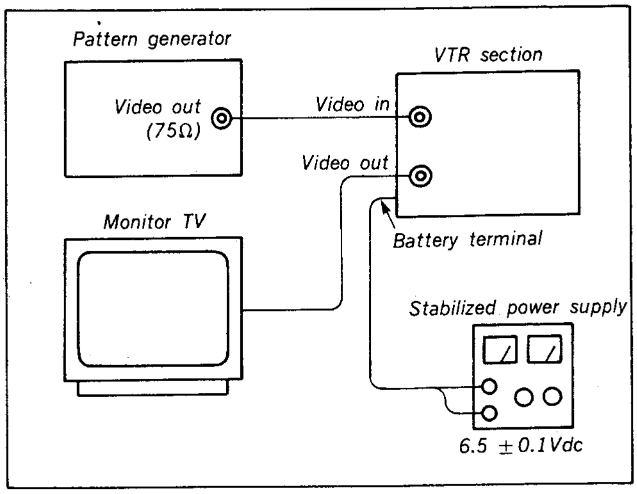


Fig. 3-1

[Setting up for adjustment]

Video signals output by an pattern generator are used as adjustment signals when adjusting the video section, and these video output signals should be within the required standard. Connect an oscilloscope to J360 (VIDEO IN) on the VA-40 board. Confirm that the amplitudes of video signal SYNC signals, of picture portions, and of burst signals are flat at approximately 0.3, 0.7, and 0.3V respectively, and that the level ratio of the burst signals and "red" signals are 0.30:0.66. Fig. 9-2 shows video signals (color bars) used in the video section adjustments.

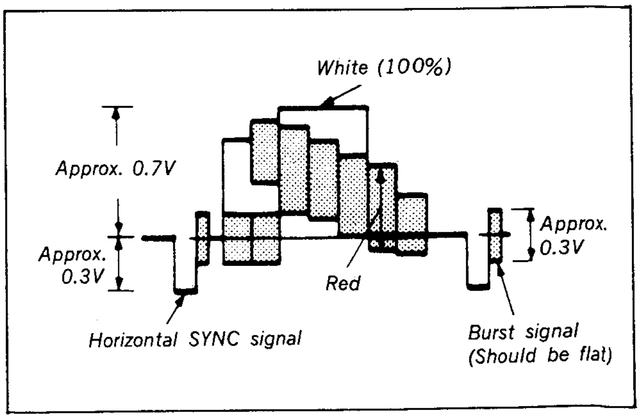
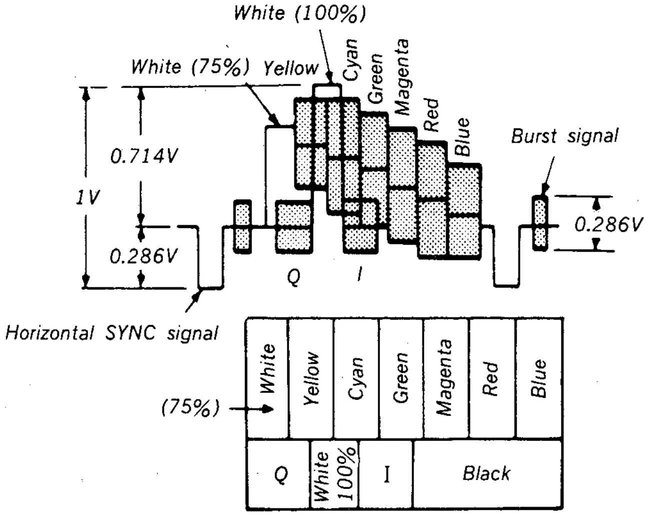


Fig. 3-2 Pattern generator color bar signals

[Alignment tape]

Tape	Description	Use for
Tracking (WR5-1N)	1. Recording area PCM — Video 2. Recording content: CH2: 1MHz linearity adjustment signal (CH1: 9MHz)	Drum linearity adjustment
Video frequency response (WR5-6N)	1. Recording area Video 2. Recording content RF sweep 0 to 10MHz 3. Marker 1, 3.58, 5.5 and 7MHz	Frequency response adjustment
Operation checking SP mode (WR5-4NSP) LP mode (WR5-4NL) Note: PCM area is not included in WR5-4NL.	1. Recording area Video 2. Recording content ■ Video area ● Video signals Color bar: 4 min. } Iterative Monoscope: 4 min. [Color bars]  White (100%) White (75%) Yellow Cyan Green Magenta Red Blue Burst signal 0.714V 1V 0.286V 0.286V Q I Horizontal SYNC signal (75%) White Yellow Cyan Green Magenta Red Blue Q White 100% I Black ● Audio signal (AFM) 400Hz, 60% modulation ■ PCM area ● Audio signal (PCM) 1kHz, 0dBs 4 min. color bar portion 20Hz, −6dBs 2 sec. 400Hz, −6dBs 4 sec. } Mono scope portion iterative 14kHz, −0.7dBs 2 sec.	Operation checking

[Required level and impedance of input/output signal]

Video input	Mini pin jack Input signal: 1Vp-p, 75Ω unbalanced, sync negative
Video output	Pin jack Output signal: 1Vp-p, 75Ω unbalanced, sync negative
Audio input	Mini pin jack Input level: −10dBs (0dBs = 0.775Vrms)
Audio output	Pin jack Specified output: −10dBs Loading impedance: less than 10kΩ

[Service mode]

Lead the unit to service mode by the following procedures.

1. Service mode start

When SVP land (K IN 0 (W190 pin ㉘ on FC-16 board) and K OUT 3 (W190 pin ㉙) is shorted for more than a second, service mode goes to 1 and all segments in LCD lights up. After this, every time the land is shorted, the service mode turns as follows:

Service mode 2
↓
Service mode 3
↓
Service mode 4
↓
Service mode 5
↓
Service mode 6

The number of the service mode is shown at the most right digit on the LCD (except Service mode 1).

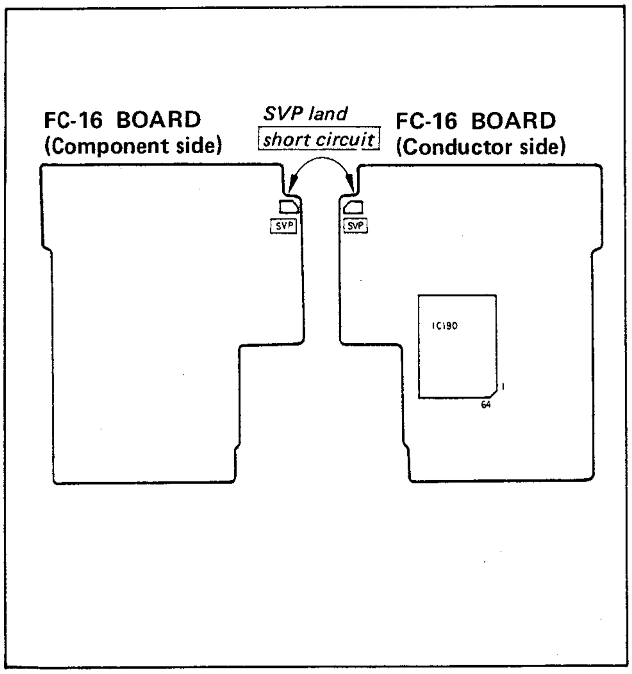

FC-16 BOARD
(Component side)
SVP land
short circuit
FC-16 BOARD
(Conductor side)
SVP
SVP
IC190
1
64

Fig. 3-3-1. SVP land

When setting the service mode with cabinet, remove the VTR panel by the precedure of the item 2), 2-2 REMOVING THE CABINET (LEFT), SECTION 2 DISASSEMBLY on the service manual, and short-circuit the SVP land on FV-1 board.

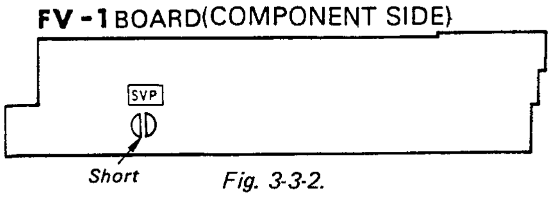

FV-1 BOARD(COMPONENT SIDE)
SVP
Short

Fig. 3-3-2.

2. Service mode release

Short SVP land after the Service mode 6 comes out, and it makes the LCD (Liquid crystal display) indicates "− −: − −: − −", and pressing data button makes it counter indication.

3. Indication on LCD

Following codes are shown on the LCD (Liquid crystal display) at each service mode except Service mode 1.

① Present executing operation mode
It is indicated by two-digits at each service mode except Service mode 6. (See Table 3-1.)

② Following executing operation mode
(When there is no command of following operation, present executing operation mode is shown.)
It is indicated by two-digits. (See Table 3-1.)

③ Warning code
When something unusual happens, the cause is shown by a digit code. (See Table 3-2.)

④ Service mode number

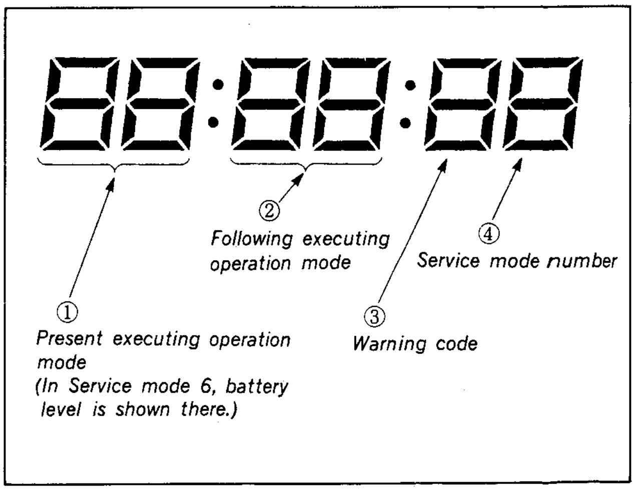

88:88:88
②
Following executing operation mode
④
Service mode number
①
Present executing operation mode
(In Service mode 6, battery level is shown there.)
③
Warning code

Fig. 3-4 Indication on LCD

Table 3-1 Code for operation mode

Code	Operation mode	Code	Operation mode	Code	Operation mode
00	INITIAL	83	REW	46	CUE
01	EJECTED	04	VTR REC	56	REV
11	DEW	14	REC PAUSE	A6	FR SEARCH CUE
31	UNLOADING	44	INSERT	B6	FR SEARCH REV
02	STOP READY	54	INSERT PAUSE	07	STILL
12	LOADING	A4	CAM REC	27	1/5 SLOW
32	STOP BATTERY DOWN	B4	CAM STANDBY	47	1/10 SLOW
52	STOP EMERGENCY	85	EDIT CUE	67	FRAME
62	STOP TAPE END	95	EDIT REV	69	REC REVIEW
72	STOP TAPE TOP	06	PB		
03	FF	36	−×1		

Table 3-2 Warning code

Code	Cause of abnormal inoperation (detected by Mechanism control IC001 on SS-86 board)
0	Normal
1	Error in loading/unloading
2	Error of capstan speed. (Pulse is not fed to IC001 pin ⑱ (CFG) or the pulse frequency is too low.)
3	Error of capstan speed. (Pulse frequency at IC001 pin ⑱ is too high.)
4	Error in reel ratation. (Pulse is not fed to IC001 pin (63) (T reel FG) or pin (64) (S reel FG.)
5	Error in drum ratation. (Pulse frequency at IC001 pin ⑰ (DFG) is too high or too low.)
6	Error in drum phase. (Drum phase is not locked.)

4. Description of the service modes

[Service mode 1]

All segments in LCD light up.

[Service mode 2]

Not used with this model.

[Service mode 3]

"Switching position adjustment" can be performed in playback mode.

[Service mode 4]

"CH'1 playback frequency characteristic adjustment" can be performed in playback mode.

[Servcie mode 5]

1) Emergency inoperation by the following detection of abnormality is released.
   1. Dew detection
   2. Battery down detection
   3. Error detection in loading/unloading
   4. Error detection in drum rotation
   5. Error detection of drum phase
   6. Error detection of capstan (no CFG pulse)
   7. Error detection of capstan
      (CFG pulse frequency is too high.)
2) When the still adjustment volume is displayed, still adjustment can be performed.

[Service mode 6]

"Battery failure adjustment" can be performed.

Battery level is indicated at most left two-digits. Or mark "X" is shown in lower center on screen of a monitor TV at CAMERA mode, and "EVF display position adjustment" can be performed.

3-1. POWER SUPPLY ADJUSTMENT

3-1-1. VA 5V Voltage Check (VA-40 board)

Mode	E-E
Signal	Arbitrary
Measurement point	W361 pin ⑦
Measuring instrument	Digital voltmenter
Specified value	5.05 ±0.05Vdc

[Checking method]

At pin ⑦ of W361 satisfies the specification.

3-2. SYSTEM CONTROL ADJUSTMENT

3-2-1. Battery Failure Adjustment (SS-86 board)

Mode	Record
Subject	Arbitary
Measurement point	+: (+) battery terminal −: (−) battery terminal
Measuring instrument	Digital voltmeter
Adjusting element	RV001
Specified value	The digits on the counter of LCD indicate "92", when power supply voltage is 5.76 ±0.01Vdc.

Note 1:

Connect a stabilized power supply unit and the battery terminals ((+) and (−)) with thick and short lead wires.

Note 2:

Camera section and EVF one should be connected to the unit.

[Adjusting method]

1) Set to Service mode 6. (See [Service mode].)
2) Confirm the power supply voltage to 6.5 ±0.1Vdc.
3) Set to camera REC mode.
4) Put down the power supply voltage slowly to 5.76 ±0.01Vdc.
5) Adjust RV001 so that the left two digit is "92".

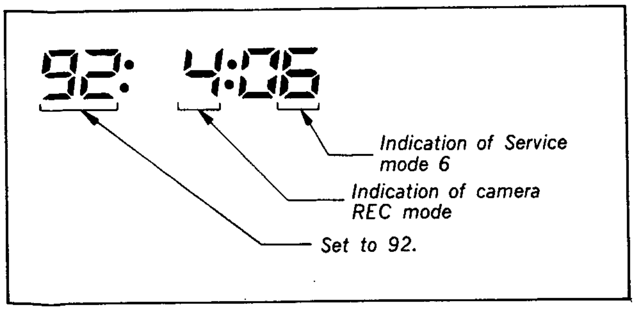


Fig. 3-5

[Confirming method]

1) Confirm that the Service mode 6 is set.
2) Make the power supply voltage to 6.5 ±0.1Vdc.
3) Turn on the power (from OFF).
4) Make the camera to REC mode.
5) Down the power supply voltage slowly to 5.81 ±0.01Vdc
6) Either of the following indications should be indicated on LCD.
    1) No ⧄ indication
    2) ⧄ indication blinks slowly (0.8Hz).
7) Down the power supply voltage slowly to 5.71 ±0.01Vdc. Confirm that the ⧄ indication blinks rapidly (4Hz).
8) Release the service mode (See [Service mode] .).

3-2-2. Clock Adjustment (FC-16 board)

Mode	E-E
Measurement point	IC190 pin (54)
Measuring instrument	Frequency counter
Adjusting element	CT190
Specified value	512.001 ±0.002Hz

[Checking method]

Adjust CT190 so that the frequency counter reading is 512.001 ±0.002Hz.

3-3. SERVO SYSTEM ADJUSTMENT

3-3-1. Switching Position Adjustment (SS-86 board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-4NSP)
Measurement point	CH1: VIDEO OUT (VA-40 board J361) CH2: SS-86 board TP303 (RF SWP)
Measuring instrument	Oscilloscope
Adjusting element	RV002
Specified value	6.5 ±0.3H (410 ±20μsec)

[Adjusting method]

1) Make the unit to Service mode 3 (See [Service mode] .).
2) Adjust RV002 for 6.5±0.3H (410 ±20μsec).
3) Release the service mode.

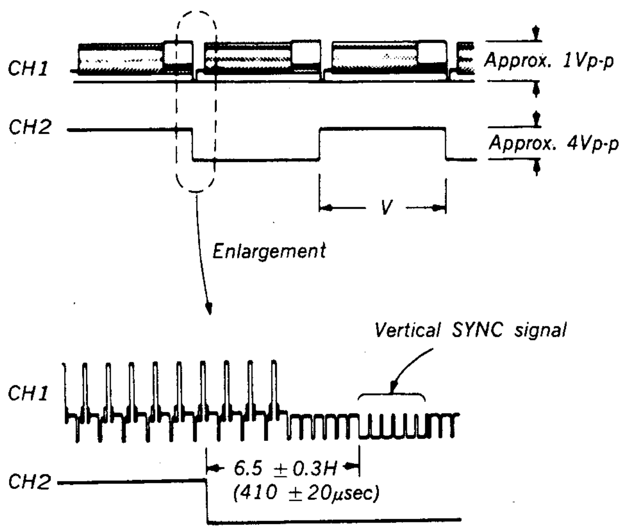


Fig. 3-6

3-4. VIDEO BLOCK ADJUSTMENT

The adjustment of the video system should in principle be followed the undermentioned adjustment procedure.
The color video signal supplied from the pattern generator is utilized as the video input signal of the video system adjustment in recording mode. Make sure to check that the SYNC signal and color burst signal are matched with those in the set-up of during the adjustment of as shown in Fig. 3-2.

[Adjustment procedure]

1) Playback frequency response adjustment
2) Flying erase check
3) Y/C separation adjustment
4) IR2 adjustment
5) Emphasis input level adjustment
6) Video out level adjustment
7) PB Y level adjustment
8) YD adjustment
9) Y FM carrier frequency adjustment
10) Y FM deviation adjustment
11) Chroma emphasis f_0 adjustment
12) REC Y recording current adjustment
13) REC C recording current adjustment
14) EVF display position adjustment

3-4-1. Playback Frequency Response Adjustment (SS-86 board)

(1) CH1, CH2 adjustment

CH2 adjustment is shown in [ ] .

Mode	Playback
Signal	Alignment tape for frequency response adjustment. (WR5-6N)
Measurement point	Pin ④ of CN004 in SS-86 board External trigger: Pin ② of CN004 in SS-86 board Trigger slope: + [–]
Measuring instrument	Oscilloscope
Adjusting element	RV302 [RV301]
Specified value	3.58MHz level: 5.5MHz level = 4 : 3

[Adjusting method]

1) Adjustment RV302 [RV301] so that the level difference ratio between 3.58MHz and 5.5MHz should be 4:3.

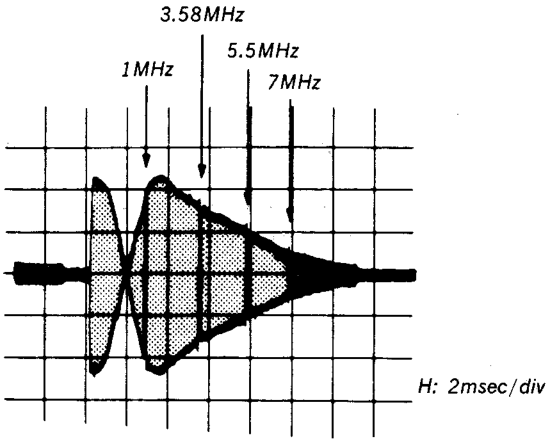


Fig. 3-7

(2) CH1′ adjustment

Mode	Playback at Service mode 4 *¹
Signal	Alignment tape for frequency response adjust adjustment (WR5-6N)
Measurement point	Pin ⑤ of CN004 in SS-86 board External trigger: Pin ② of CN004 in SS-86 board Trigger slope: –
Measuring instrument	Oscilloscope
Adjusting element	RV306
Specified value	3.58MHz level: 5.5MHz level = 4:3

*¹ Make the unit to service mode 4 with reference to [Service mode], and make sure to release it after the adjustment.

[Adjusting method]

Adjust RV306 so that the level difference ratio between 3.58MHz and 5.5MHz should be 4:3.

3-4-2. Flying Erase Check (SS-86 board)

Mode	Record
Signal	Arbitrary
Measurement point	Pin ⑫ of CN003 (FE (X))
Measuring instrument	Oscilloscope and frequency counter
Specified value	Frequency: more than 7.5MHz Voltage: more than 7.0Vp-p

Note: Be sure to use MP type tape.

[Checking method]

Confirm that the oscillation frequency is more than 7.5MHz, and the oscillation voltage is more than 7.0Vp-p.

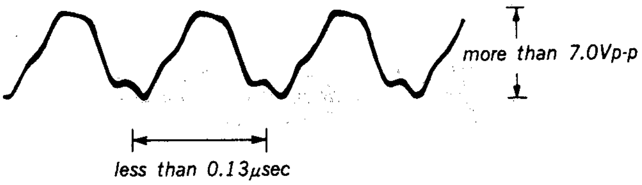


Fig. 3-8

3-4-3. Y/C Separation Adjustment (VA-40 board)

Mode	E-E
Signal	Color bar
Measurement point	Pin ㉕ of IC360
Measuring instrument	Oscilloscope
Adjusting element	RV366
Specified value	Minimum residual chroma component

Note:

Before adjustment, connect 10μF capacitor in between pin ㊴ of IC360 and ground.

[Adjusting method]

1) Adjust RV366 to minimize residual chroma component.

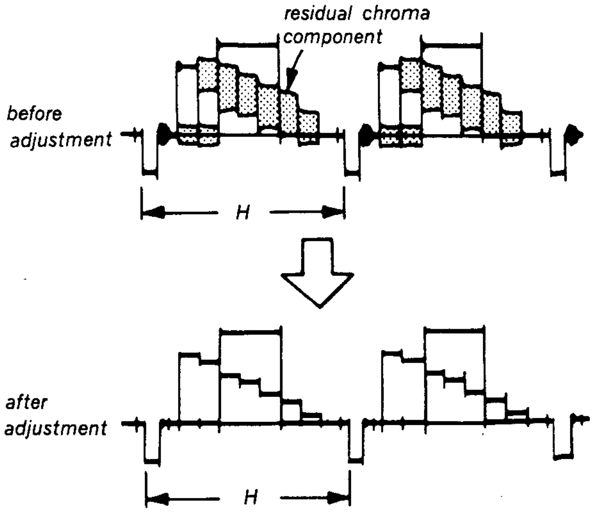


Fig. 3-9

3-4-4. IR2 Adjustment (VA-40 board)

Mode	E-E
Signal	Color bar
Measurement point	CH1: Pin ⑤ of IC360 (REC C RF OUT) CH2: Pin ⑧ of IC360 (BF OUT)
Meter	Oscilloscope
Adjusting element	RV365
Specified value	a = b (See Fig. 3-10.)

Note:

Adjust after connecting a 10 k-ohm resistor between pin ⑧ and GND of IC360.

[Adjusting method]

1) Adjust RV365 so that the falling position of the burst pulse of CH2 (BF OUT) aligns with the center of the burst signal of CH1 (REC C RF OUT). (See Fig. 3-10.)

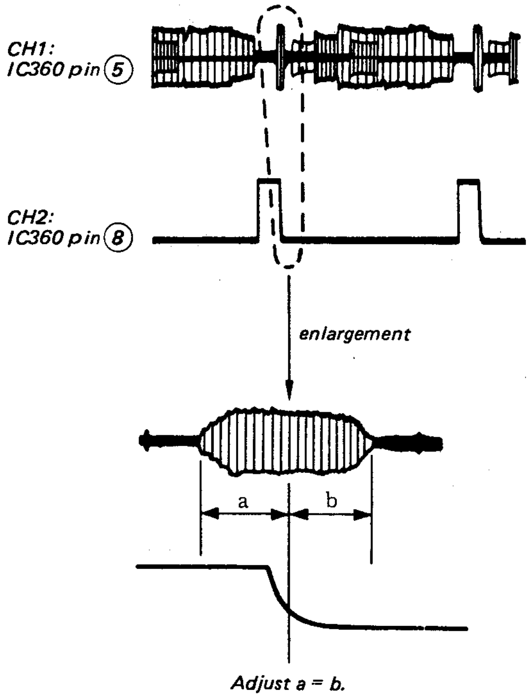


Fig. 3-10

3-4-5. Emphasis Input Level Adjustment (VA-40 board)

Mode	E-E
Signal	Color bar
Measurement point	Pin ㉚ of IC360
Measuring instrument	Oscilloscope
Adjusting element	RV369
Specified value	0.50 ±0.02Vp-p

[Adjusting method]

1) Adjust RV369 for 0.50 ±0.02Vp-p.

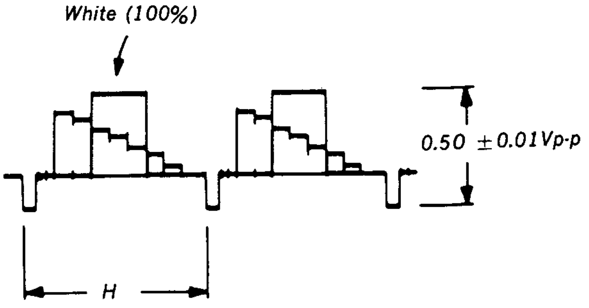


Fig. 3-11

3-4-6. Video Out Level Adjustment (VA-40 board)

Mode	E-E
Signal	Color bar
Measurement point	J361 (Video Out) on VA-40 board
Measuring instrument	Oscilloscope
Adjusting element	RV360
Specified value	1.00 ±0.05Vp-p

Note:

Be sure to terminate J361 (VIDEO OUT) at 75 ohms.

[Adjusting method]

1) Adjust RV360 on for 1.00 ±0.05Vp-p.

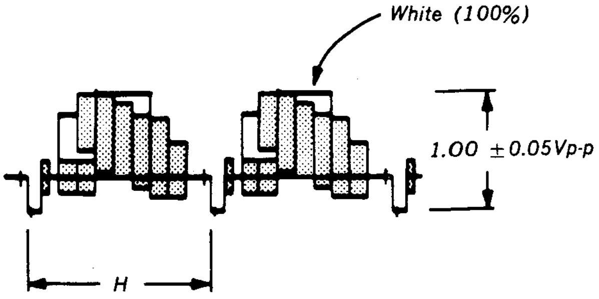


Fig. 3-12

3-4-7. PB Y Level Adjustment (VA-40 board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-3NSP), Color bar portion
Measurement point	J361 (VIDEO OUT) on VA-40 board
Measuring instrument	Oscilloscope
Adjusting element	RV362
Specified value	1.00 ±0.05Vp-p

Note 1:

Be sure to be off the EDIT switch (PA-13 board S990).

Note 2:

Be sure to terminate J361 (VIDEO OUT) at 75 ohms.

[Adjusting method]

1) Adjust RV362 for 1.00 ±0.05Vp-p.

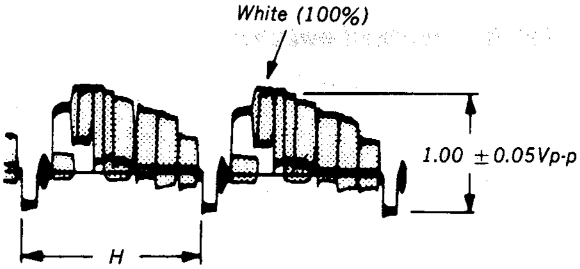


Fig. 3-13

3-4-8. YD Adjustment

Mode	Playback + Pause
Signal	Alignment tape for operation check (WR5-5NSP), Color bar portion
Measurement point	Monitor TV
Measurement equipment	Monitor TV
Adjusting element	RV367
Specified value	Make inconspicuous the Y flicker

[Adjustment method]

Adjust with RV367 so to make inconspicuous the Y flicker on the monitor TV screen.

3-4-9. Y FM Carrier Frequency Adjustment (VA-40 board)

Mode	E-E
Signal	No signal
Measurement point	Pin (59) of IC360
Measuring instrument	Frequency counter
Adjustment element	RV364
Specified value	4.20 ±0.05MHz

[Adjusting method]

1) Adjust RV364 for 4.20 ±0.05MHz.
2) Perform "Y FM Deviation Adjustment".

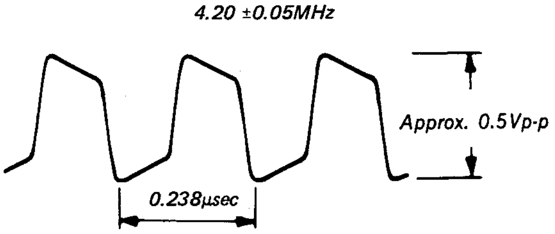


Fig. 3-14

3-4-10. Y FM Deviation Adjustment (VA 40 board)

Mode	Record and Playback
Signal	Color bar
Measurement point	J361 (VIDEO OUT) on VA-40 board
Measuring instrument	Oscilloscope
Adjusting element	RV363
Specified value	Playback level: 1.00 ±0.05Vp-p

Note 1:

Be sure that the "VIDEO OUT Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been already completed.

Note 2:

Be sure to be off the EDIT switch (S990 on PA-13 board).

Note 3:

Be sure to terminate J361 (VIDEO OUT) at 75 ohms.

[Adjusting method]

1) Record the color bar signal.
2) Playback the section recorded by 1).
3) Confirm that the playback output level is 1.00 ±0.05Vp-p.
4) When 3) is not satisfied, adjust RV363 as follows. And then repeat the abovementioned steps 1) to 3).

	RV363 turning direction
more than the specified value	counter-clockwise (↺)
less than the specified value	clockwise (↻)

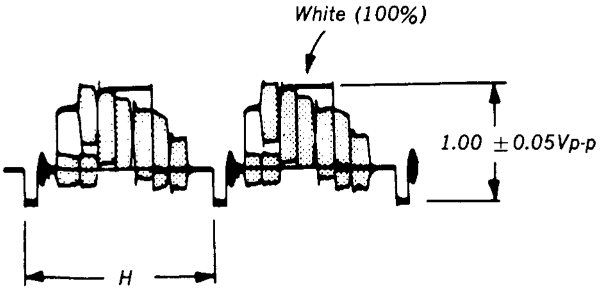


Fig. 3-15

3-4-11. Chroma Emphasis fo Adjustment (VA-40 board)

Mode	E-E
Signal	Color bar
Measurement point	Pin ⑤ of IC360
Measuring instrument	Oscilloscope
Adjusting element	FL360
Specified value	fo component minimum.

[Adjusting method]

Adjust FL360 to minimize the amplitude of flat components of chroma signal.

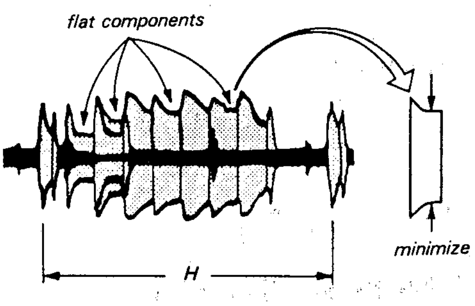


Fig. 3-16

3-4-12. REC Y Recording Current Adjustment (VA-40 board)

Mode	Record
Signal	No signal
Measurement point	Pin ③ of CN004 (REC RF) on SS-86 board
Measuring instrument	Oscilloscope
Adjusting element	RV361
Specified value	210 ±10mVp-p

Note:

Be sure to perform each Recording Current Adjustment of REC C, REC AFM and REC AFM after the REC Y Recording Current Adjustment.

[Adjusting method]

Adjust RV361 for 210 ±10mVp-p.

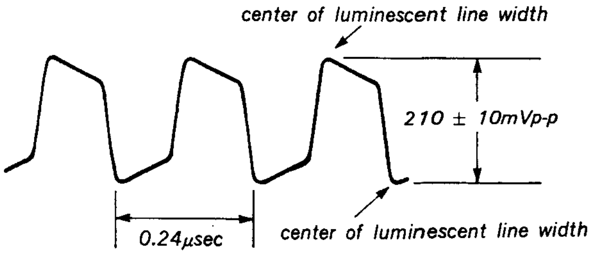

center of luminescent line width
210 ± 10mVp-p
0.24μsec
center of luminescent line width

Fig. 3-17

3-4-13. REC C Recording Current Adjustment (VA-40 board)

Mode	Record
Signal	Color bar
Measurement point	Pin ③ of CN004 (REC RF) on SS-86 board
Measuring instrument	Oscilloscope
Adjusting element	RV368
Specified value	130mVp-p

Note 1:

Be sure to perform REC AFM Recording Current Adjustment after the REC C Recording Current Adjustment.

Note 2:

Use MP type tape.

[Adjusting method]

Adjust RV368 for 145mVp-p.

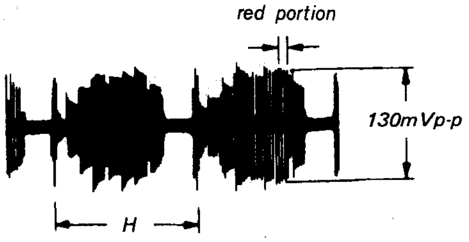


Fig. 3-18

3-4-14. EVF Display Position Adjustment (VA-40 board)

Mode	Camera standby
Object	Optional
Adjusting element	CV360
Specified value	Position the "X" mark in the center of the monitor screen.

[Adjusting method]

1) Set to Service mode 6. (See the [Service modes] section.)
2) Adjust CV360 to position the "X" mark at the center of the monitor sereen (a = b). (See Fig. 3-19.)

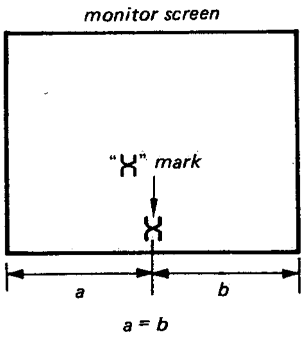

monitor screen
"X" mark
a
b
a = b

Fig. 3-19

3) Release the service mode.

3-5. AUDIO SYSTEM ADJUSTMENT

Color bar signal should input to VIDEO IN terminal for the adjustment.

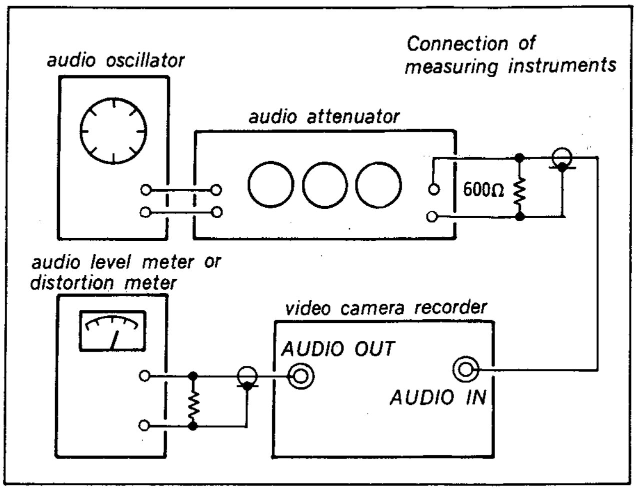

Connection of measuring instruments
audio oscillator
audio attenuator
600Ω
audio level meter or distortion meter
video camera recorder
AUDIO OUT
AUDIO IN

Fig. 3-20

3-5-1. E-E Output Level Check

Mode	Record
Signal	400Hz, −10dBs
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	−10 ±2dBs

[Checking method]

1) Be sure the audio output level is −10 ±2dBs.

3-5-2. Overall Level Characteristics Check

Mode	Self-recording and playback
Signal	400Hz, −10dBs
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	−10dB ±3dBs

[Checking method]

1) Record the signal
2) Playback the recorded portion.
3) Be sure the audio output level is −10 ±3dBs.

3-5-3. Overall Distortion Check

Mode	Self-recording and playback
Signal	400Hz, −10dBs
Measurement point	AUDIO OUT terminal
Measuring instrument	Distortion meter
Specified value	Less than 0.5% *¹

[Checking method]

1) Record the signal.
2) Playback the recorded portion.
3) Be sure the distortion is less than 0.5%.*¹

*¹ The value in case of using a distortion measuring filter (Fig. 3-21).
It is under 1.0% without the filter.

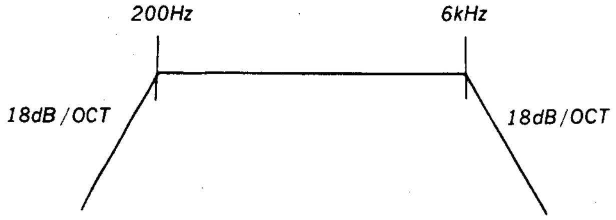


Fig. 3-21

3-5-4. Overall Noise Level Check

Mode	Self-recording and playback
Signal	No signal Plug in AUDIO IN terminal with a shorting plug.
Measurement point	AUDIO OUT terminal
Measuring instrument	Audio level meter
Specified value	Less than −68dBs *²

[Checking method]

1) Record the signal.
2) Playback the recorded portion.
3) Be sure the noise level is less than −68dBs. *²

*² The value in case of using IHF-A weighting filter.

3-6. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

3-6-1. Horizontal Slant Adjustment

Mode	Playback
Signal	Monoscope
Specified value	See Fig. 3-23

[Adjusting method]

1) Adjust the volume dumbbell Ⓓ (BRIGHT) for appropriate brightness on CRT screen. (See Fig. 3-24.)
2) Loosen the DY (deflection yoke) tightening nut.
3) Make a picture horizontal by turning the DY.
4) Retighten the nut. (Do not tighten excessively.)

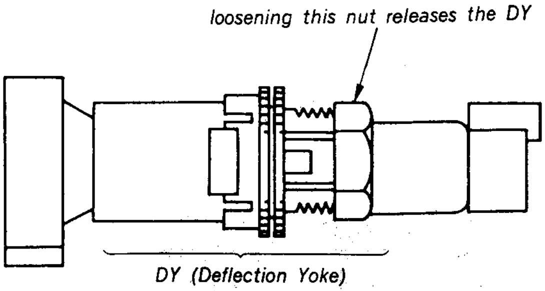
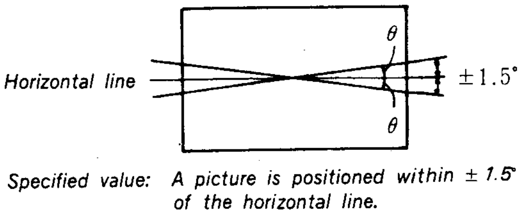
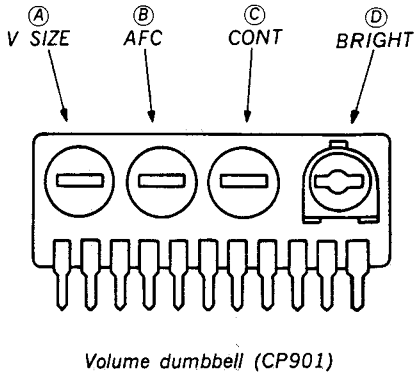


Fig. 3-22



Specified value: A picture is positioned within ± 1.5° of the horizontal line.

Fig. 3-23



Volume dumbbell (CP901)

Fig. 3-24

3-6-2. Centering Adjustment

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-4NSP)
Specified value	See Fig. 3-26

[Adjusting method]

1) With the centering magnets, position the screen in even peripheral margins, both horizontally and vertically.

Note:

Since the center position is affected by the terrestrial magnetism, adjust at the center of displacement with turning the unit 360° horizontally.

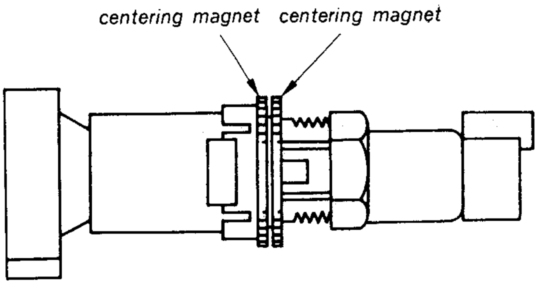


Fig. 3-25

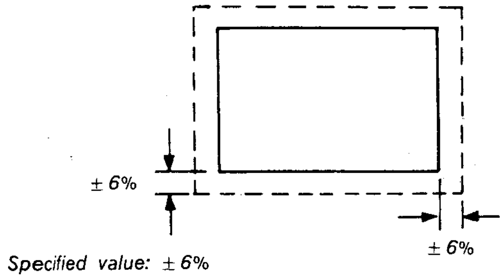


Fig. 3-26

3-6-3. AFC Adjustment (VF-13 board)

Mode	E-E or Camera standby
Signal	Color bar
Measurement point	C915 ⊕ side
Measuring instrument	Digital volt meter or oscilloscope (DC range)
Adjusting element	Volume dumbbell Ⓑ
Specified value	3.0 ±0.2Vdc

[Adjusting method]

1) Adjust volume dumbbell Ⓑ for 3.0 ±0.2Vdc. (See Fig. 3-24.)

3-6-4. Horizontal Amplitude Adjustment (VF-13 board)

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-4NSP)
Adjusting element	C905
Specified value	6 ±3%

[Adjusting method]

1) Focus with RV901.
2) Adjust volume dumbbell Ⓐ so that the upper and lower edges of the monoscope picture fits those of the screen. (See Fig. 3-27.)
3) Turn volume dumbbell Ⓓ for appropriate brightness.
4) Connect or disconnect the patterns A and B, which is connected to C905 H size adjusting capacitor, so that the horizontal overscan becomes 6 ±3% (total of the both sides, right and left). (See Fig. 3-28.)

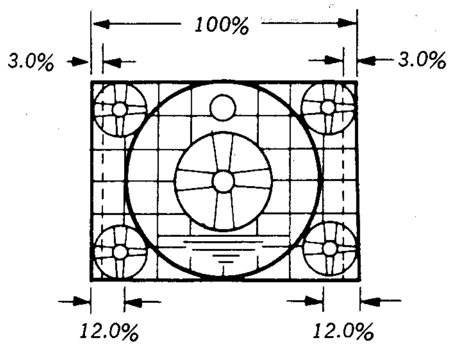
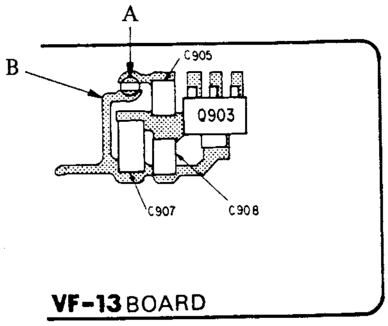


Fig. 3-27



A	H size
Disconnect	Small ↕
Connect	Large

Fig. 3-28

3-6-5. Vertical Amplitude Adjustment (VF-13 board)

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-4NSP)
Adjusting element	Volume dumbbell Ⓐ
Specified value	6 ±3%

[Adjusting method]

Adjust the volume dumbbell Ⓐ for 6 ±3% vertical overscan (total of the both sides, top and bottom).

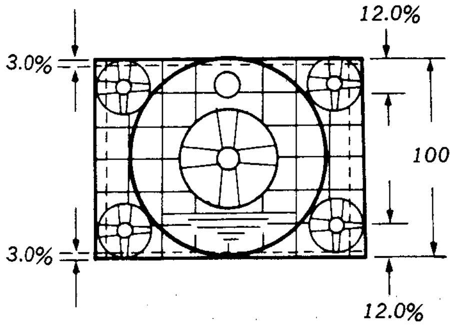


Fig. 3-29

3-6-6. Brightness and Contrast Adjustment (VF-13 board)

Mode	Playback
Signal	Monoscope portion of alignment tape for operation check (WR5-4NSP)
Adjusting element	Brightness: Volume dumbbell Ⓓ Contrast: Volume dumbbell Ⓒ

[Adjusting method]

1) Adjust volume dumbbell Ⓓ and Ⓒ alternately so that light and dark areas of a gray scale is correctly displayed. (The light area should not be so bright that the cross hatch in a monoscope circle blurs. And the dark area should not be so dark that the darkest area and third darkest one on the gray scale can not be distinguished each other.)

3-6-7. Focus Adjustment (VF-13 board)

Mode	PLAYBACK
Signal	Alignment tape for operation checking (WR5-4NSP), monoscope portion
Adjustment element	RV901

[Adjustment Method]

1) Adjust to the best focus point with RV901.

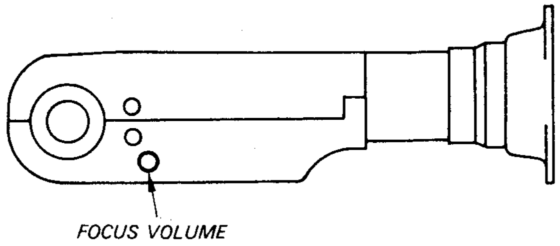


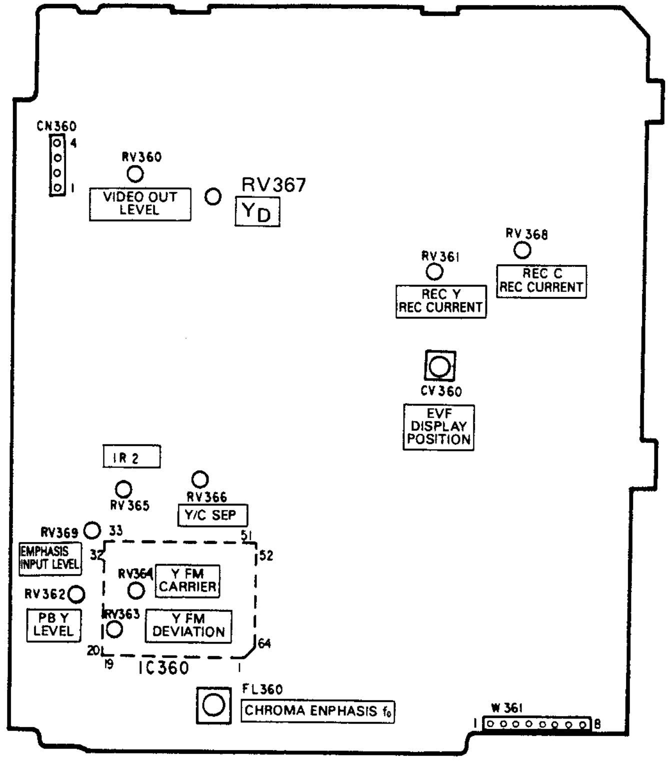
Fig. 3-30

3-6-8. Horizontal and Vertical Amplitude Confirmation

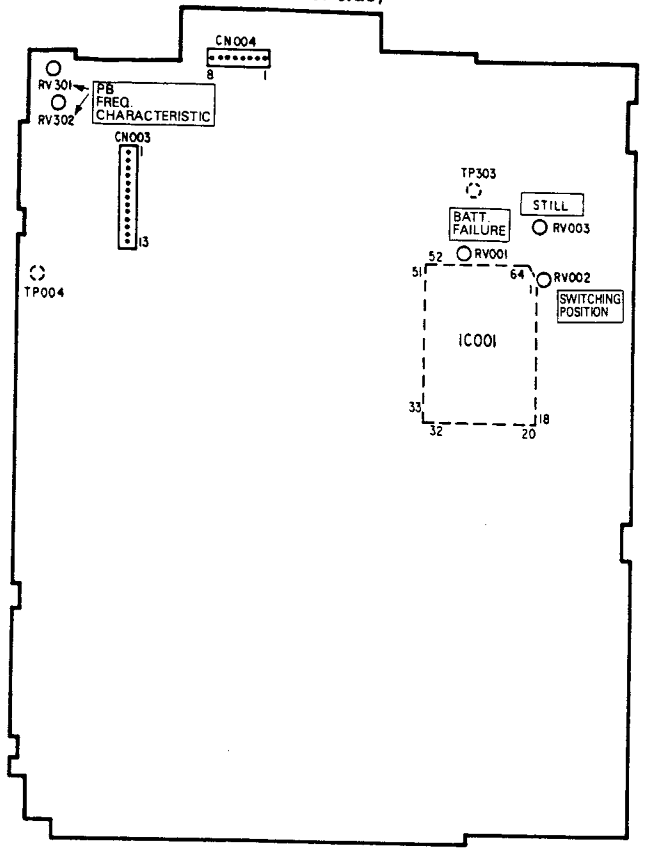
Results of horizontal amplitude adjustment in 3-6-4 and vertical amplitude adjustment in 3-6-5 should meet their specified values, respectively. If not met, make readjustments. In this case, carry out both brightness and contrast adjustment in 3-6-6 and focus adjustment in 3-6-7 again.

3-7. VIDEO SECTION PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

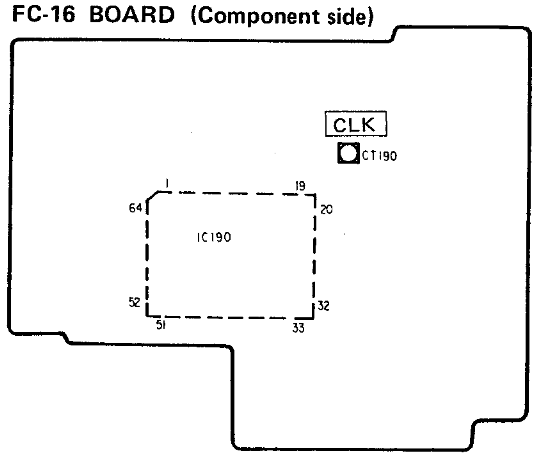
VA-40 BOARD (Component side)


CN360
4
1
RV360
VIDEO OUT LEVEL
RV367
YD
RV368
RV361
REC Y REC CURRENT
REC C REC CURRENT
CV360
EVF DISPLAY POSITION
IR 2
RV365
RV366
Y/C SEP
RV369
EMPHASIS INPUT LEVEL
33
32
51
52
RV364
Y FM CARRIER
RV362
RV363
PB Y LEVEL
Y FM DEVIATION
20
19
IC360
64
1
FL360
CHROMA ENPHASIS f0
W361
1
8

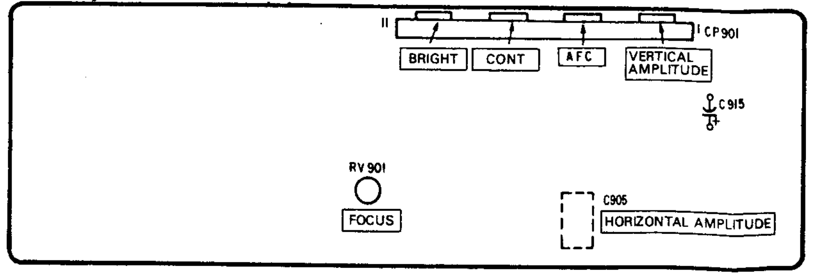
SS-86 BOARD (Conductor side)


CN004
8
1
RV301
RV302
PB FREQ. CHARACTERISTIC
CN003
1
13
TP004
TP303
STILL
RV003
BATT FAILURE
RV001
52
51
64
1
RV002
SWITCHING POSITION
IC001
33
32
20
18

FC-16 BOARD (Component side)


CLK
CT190
1
19
64
20
IC190
52
32
51
33

VF-13 BOARD (Component side)


11
1
CP901
BRIGHT
CONT
AFC
VERTICAL AMPLITUDE
C915
RV901
FOCUS
C905
HORIZONTAL AMPLITUDE